The Driller
MAY, 1958

Survey PROOF!

For *Design* and *Construction*— Drillers Prefer Bucyrus-Eries *2 to 1*

In a recent survey conducted by an independent research bureau drillers were asked, "Why do you prefer the drill?" Most drillers placed strongest emphasis on *design* and on *construction*.

On both points, Bucyrus-Eries were favored 2 to 1. It's easy to see why.

Modern Bucyrus-Erie design incorporates many firsts in the industry, including: rubber cushion shock absorber in the derrick head; automatic tool feeding device; telescoping derrick with folding braces; and steel frame and derrick.

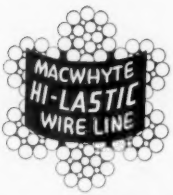
All-welded steel, box section construction accounts for the great strength of the drill frames. Machinery in the frames is locked in — shaft bearings are welded in place, then line bored to insure perfect alignment of the shafts, reels and gears. Many of the moving parts are mounted on anti-friction bearings that are prelubricated and sealed. All materials are quality-controlled in the company's research laboratory.

You, too, can enjoy the performance and profit advantages that result from these features. Write us today for the complete story or visit your nearby Bucyrus-Erie distributor and see for yourself now! Bucyrus-Erie Company, Drill [illegible] 324, U.S. Highway 40 West, [illegible]diana.

118W58C

BUCYRUS ERIE

FINEST in Water Well Drills * 1-W * 20-W * 22-W * [illegible]-L * 28-L



Macwhyte "Hi-Lastic"

cuts wire line costs ... speeds up drilling

This mild plow steel line is specially designed for drilling holes to 1,000 ft.

Here's a rugged and resilient line that enables you to drill faster at less cost. Its far greater elasticity permits tools to drop farther per stroke — to strike harder, faster blows. Moreover, "Hi-Lastic" absorbs shock, thus reducing wear on drilling equipment.

This special line lasts longer — cuts wire line costs. It's made from tough wire that shrugs off abrasion, abuse, and strain. Internally lubricated strands resist moisture, corrosion, and internal friction.

For longer wire line life and lower drilling costs, specify "Hi-Lastic" for the jobs ahead. Your Macwhyte distributor stocks it in 5/8", 3/4", and 7/8" diameters. Ask for circular 5813.

"Macwhyte Hi-Lastic takes pounding yet strands don't come loose, like on other ropes," says Arthur J. Garber. Garber & Son, commercial well drillers, of Milwaukee, Wisconsin.

MACWHYTE
Wire Rope
COMPANY
Manufacturers of Wire Rope, Wire Rope Assemblies, Slings
2939 Fourteenth Avenue, Kenosha, Wisconsin

112

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you'll INSIST upon an

AURORA®

Turb-O-Matic

SHALLOW WELL SYSTEM

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COMPACT
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SELF PRIMING
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MORE PRESSURE — units set 20# – 40#, adjustable to 50# – 70#
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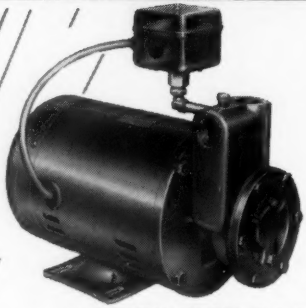
MORE CAPACITY — at 20 to 30 feet and also at higher pressures



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AURORA Always PUMPS

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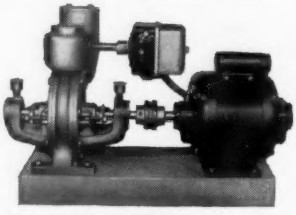

Series ATLS AURORA Turb-O-Matic

WRITE FOR BULLETIN 112-C

AURORA PUMP DIVISION
THE NEW YORK AIR BRAKE COMPANY

58 LOUCKS STREET • AURORA • ILLINOIS
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The Driller

South Milwaukee, Wisconsin

Vol. 32 No. 5

May 1958

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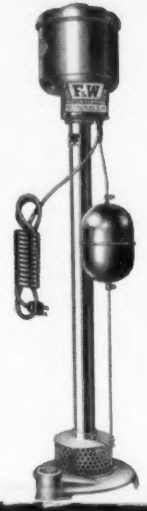

F & W Automatic Sump Pump—High capacity, completely dependable. Operates **automatically.** When water rises, pump starts; when water is pumped out, pump stops. Ruggedly built to handle large quantities of silt-laden water and to run for long periods. Operates on standard 110 volt, 60 cycle. A. C.

F & W Automatic Submersible Cellar Drainer—Operates in and under water. Automatic floatless operation. When water in sump rises, housing lifts and actuates sealed switch which starts motor. No controls to set; no adjustments to make. Built of bronze and stainless steel for years of dependable service. High capacity, quiet.

F & W Drainage Pumps—BIG TICKET ITEMS WITH VOLUME DEMAND!

With this type F & W Pump your customers can drain anything from excavations to cellars to ponds! And you can build volume and profit because these pumps are priced to sell, yet provide you a handsome profit from the steady demand provided by drainage and irrigation problems.

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F&W means *Flowing Water* by Flint & Walling

PLASTIC PIPE CONTESTS

WIN THESE VALUABLE PRIZES

"NAME ME . . . and you may win a 1958 Ford Ranchero pick-up truck! Or any of the exciting prizes shown below!"

FOUR 1958 FORD RANCHEROS

100 ADDITIONAL HIGH-QUALITY PRIZES

WHO'S ELIGIBLE:

Anyone in the United States who buys pipe of ALATHON® 25 polyethylene resin from jobbers or distributors and sells to users. This includes retailers, plumbers, well drillers, etc.

HERE'S ALL YOU DO:

HOW THE CONTEST WORKS:

Enter as often as you wish. Submit one name only on each official entry card.

All entries must be submitted in your own name, but that doesn't mean you can't get some help in thinking of the names. Why not make this a family

property of E. I. du Pont de Nemours & Co. (Inc.), to be used as it sees fit.

WINNERS WILL be notified by mail as soon as possible after each contest closes. A list of winners will be sent to any contestant requesting same and enclosing a stamped, self-addressed envelope.

1. Detach official entry blank on your current shipment of pipe made of ALATHON 25 manufactured by Anesite Company, Crescent Plastics, Inc., Franklin Plastics, Inc., Plastic Pipe & Tube Div., Plastic Process Company, Republic Steel Corporation and Yardley Plastics Company. (If you are not stocking pipe of Du Pont ALATHON 25, ask your jobber or contact any of the manufacturers mentioned to learn how to get in on these exciting contests!)

2. Choose a name for the pipe character.

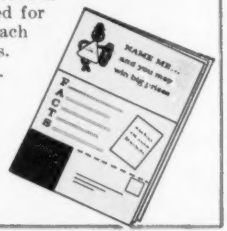
3. Fill out and mail the self-addressed entry card. Entries must be postmarked by midnight of closing date of each contest. (Starting and closing dates of each contest are listed under prizes.)

game? Ask the wife and kids to join you in suggesting names. You'll be surprised at how many names you can think of in only a few minutes. You don't have to limit the name to one word, either; use two or even three.

Prizes will be awarded for the best names received from each region shown below on map. Judging will be by an independent organization, on the basis of originality and aptness of thought. If more than one person submits the winning name, duplicate prizes will be awarded. Decision of the judges will be final. No entries will be returned. All entries and ideas therein become the

Each region will have five winners in each of the five contests. (Prizes and closing dates shown below.) After the fifth contest, all winning entries (25 from each region) will be judged for grand prizes, and a Ford Ranchero will be awarded for the best entry in each of the four regions.

Contests are subject to federal, state and local regulations.



Here are prizes and contest dates:

20 WESTINGHOUSE CALENDAR CLOCK-RADIOS
Contest No. 1 starts March 1, ends midnight, March 31

20 WARING BLENDORS
Contest No. 2 starts April 1, ends midnight, April 20

20 KODAK MOTION PICTURE CAMERAS
Contest No. 3 starts April 21, ends midnight, May 11

20 LEEDS NESTED LUGGAGE SETS
Contest No. 4 starts May 12, ends midnight, June 15

20 ZENITH TRANSISTOR POCKET RADIOS
Contest No. 5 starts June 16, ends midnight, July 31

There is a difference in flexible plastic pipe... specific quality pipe made of **ALATHON® 25.**

ONE FORD RANCHERO WILL BE AWARDED IN EACH REGION SHOWN ON MAP

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REG. U.S. PAT. OFF.

Better Things for Better Living . . . *through Chemistry*

Mr. Dealer: GET IN THE WINNERS' CIRCLE

4 NEW '58 FORDS (RANCHEROS)

with

YARDLEY

There's an entry blank in every coil of Yardley pipe

Fill out... mail in... nothing else to do!

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See the Du Pont "NAME ME" Contest announcement ad in this issue of the Driller

MAIL COUPON NOW FOR THE NAME OF YOUR YARDLEY PIPE DISTRIBUTOR

YARDLEY

Yardley Plastics Co.
142 Parsons Ave., Columbus 15, Ohio

Send me further information on the Plastic Pipe Contests and the name of my Yardley pipe distributor.

Name _____

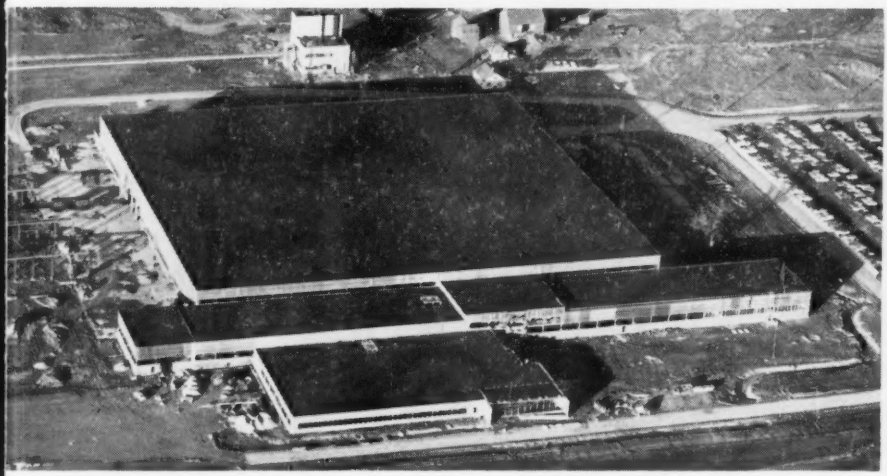
Company _____

Address _____

City _____ **State** _____

NOW BEGINNING OPERATIONS . . .

New home of today's MOST PREFERRED drills



Bucyrus-Erie's new $12 million drill plant in Richmond, Indiana, has already begun operating. Machine tools have been installed; shops and offices have been equipped, and preliminary manufacturing operations have begun.

The first machines to be assembled in the Richmond plant will be blast hole drills for mines and quarries. Assembly of water and oil well drills will follow.

These will be the same high quality drills that have long been most preferred by thousands of drillers everywhere. According to an impartial survey recently conducted by an independent research bureau, Bucyrus-Erie water well drills are preferred 2 to 1 over all other makes combined!

Enjoy top drill profits securely backed by a company that has traditionally invested in your future. Investigate Bucyrus-Eries today.

117W58C

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY • DRILL DIVISION • U.S. HIGHWAY 40 WEST, BOX 324, RICHMOND, INDIANA

FIRST with the FINEST in Water Well Drills

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THE ALL-NEW MYERS 6" "SC" SUBMERSIBLE

5, 7½, 10 and 15 horsepower

for plus sales with full profit

Ideal for farm, factory, school, municipality dairy, motel, golf course, park and estate

There are 15 combinations of the new "SC" available in two types: "pancake" construction for 40-80 GPM and "bowl" type for 90-200 GPM. Both types are proven submersible pump designs, and every pump is factory tested.

NEW PRODUCT LINE

BOTH PUMP AND MOTOR ARE BUILT AND GUARANTEED BY MYERS

PRICED RIGHT AND DESIGNED FOR FIELD MAINTENANCE

NEW EPOXY COATED "FIRE CURED" PRESSURE TANK . . .

looks better and lasts longer than any pressure tank on the market!

Through Myers exclusive "fire cured" process, an epoxy coating is bonded to the steel surface of the tank. This durable finish is impervious to the ravages of the worst kind of water, takes day-to-day impacts without damage, will last a lifetime in normal use. Can be successfully spray-painted any color.

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WRITE TODAY FOR FREE INFORMATION AND LITERATURE:

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Company_____

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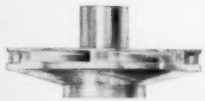
City_____ State_____

now...
a new, improved
SUBMERSIBLE PUMP
from STA-RITE
You're looking at tomorrow's pump... *today*. Made possible by a completely new concept in Submersible pump engineering... Sta-Rite *polystyrene plastic impellers*. The simple fact is—after 3 years of testing—Sta-Rite polystyrene impellers now make better, more efficient pumps. Plastic—durable enough for boat hulls; sanitary enough for drinking glasses.

Plastic impellers—smoother water passages; much higher performance per stage; proved better in thousands of Sta-Rite jet pumps! And the complete new Sta-Rite submersibles pump to 875 ft., deliver up to 6000 GPH.

THIS IS SUBMERSABILITY

"Sealed-Power" polystyrene impellers . . . resist corrosion, resist abrasives, won't absorb water, won't swell.



Ordinary tools are all you need to service this pump at the well. What's more, liberal, new Exchange Plan lets you pull a pump when needed, exchange immediately for factory repair. Be sure to get the details.

STA-RITE

For full information about new Model PP Submersible Pumps, plus the complete new line of special submersibles, write, wire or call Sta-Rite Products, Inc., Delavan, Wisconsin

Warehouse and factories in these cities: Chamblee, Ga. • Los Angeles, Calif. • Dayton, Ohio • Miami, Fla. Sherman, Texas • Denver, Colo. • In Canada: Sta-Rite Pumps (Canada) Ltd., Ajax, Ontario

Driller Eppa Lake enjoys the company of his 10-year-old son, Steve, as he works under lights to finish a well he's drilling with his 1-W drill near Belen, N.M.

Easy Drilling, Tough Customers

New Mexico's Eppa Lake keeps his clients happy by drilling low-cost, trouble-free wells for them in Rio Grande Valley.

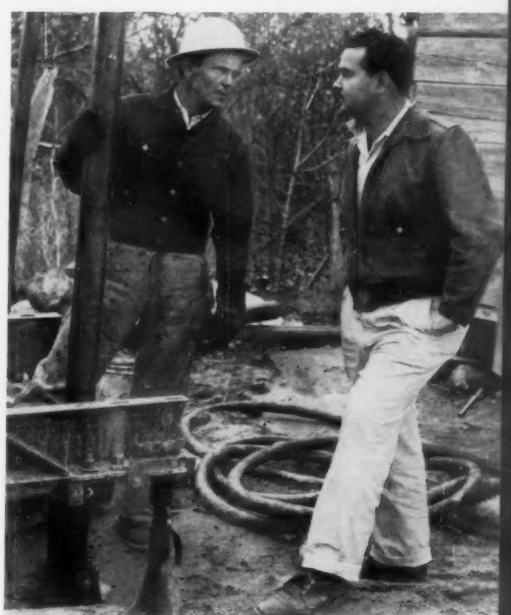
by Ray Day

ON a December night last winter, a weatherbeaten Spanish-American stood bundled up against the cold, watching well driller Eppa Lake "set" a well near Belen, New Mexico. Lake, a wiry, tough driller, was wet and cold from rubbing the bailer against his leg. Four times he'd gently driven the 90-ft., 4-in. well casing toward a tight lens of hard clay in the Rio Grande River bottom. He still wasn't satisfied.

"I'm still getting a show of gravel. It's coming in from the bottom," he yelled to his customer. "We'll drive the casing once more, and if that don't seal it off, we'll drive it again. I want to set it down on something solid, so your well won't ever give you maintenance trouble."

The old native turned to this writer and said, "That is what I like about Señor Lake. He is an honest man. I would rather have my well drilled by him, at night, than by other drillers in the daytime. He gives you water, and the price is fair."

That story is one of many which could be told about Lake's reputation. He is one of several water well drillers who make the Rio Grande Valley their headquarters. Lake has the distinction of being the first man to recognize that the Bucyrus-Erie 1-W drill would do a job equal to, or perhaps better than larger size machines in his locality. He is not a large operator. In fact, the new 1-W and an old homemade outfit he has had for many years are the only two machines he owns. He works



A homeowner visits Lake on location to talk over a prospective well job. This is how many of Lake's jobs originate.

Never one to call a job "good enough", Lake welds a threaded end onto casing.

part time as a driller for the U. S. Government, in connection with Bureau of Indian Affairs water well development in central New Mexico, because the domestic well drilling market can't occupy his full time.

But he satisfies about as critical a clientele as any driller serves. Of all his drilling business, 90% is the development of domestic water wells for Spanish Americans who live in the Rio Grande Valley between Los Lunas and Socorro, N.M. The standard of living for these people is improving as they take better jobs with the railroad, with municipalities, with industry, and with nearby military activities. But they still work hard for their money, and when it comes to building new homes —or developing water wells for these homes—they like to see their money go as far as possible. The driller is rare who can please them fully, but Lake manages to do it. Repeat business comes frequently.

Drills Rich Valley

The Rio Grande Valley below Albuquerque is as old as civilization. Archaeologists have recently uncovered near Belen evidence of a civilization over 10,000 years old. The ancient culture which flourished on the same ground which Lake now drills predates anything in China, the Tigris, the Nile or the Euphrates.

For all those thousands of years, the Rio Grande Valley has been a warm, sheltered haven in all but winter's worst weather. The valley is surrounded on all sides by mountains which have snow caps in winter. In ages past, the topsoil, sand, gravel and cobbles washed down into the river bed. There has been an accretion, or buildup of the river bed, accelerated during the past 50 years by overgrazing and bad farming practices. Finer soil has often buried the larger gravel particles as a result, so that now the chief formations include sand, fine to coarse gravel, and clay lenses. There is also some sand rock and siltstone.

The valley is rich in underground water resources. While much of the surface water has become contaminated because some cities and towns dump sewage into the Rio Grande, the entire region is underlain with good, soft water of excellent purity. It is separated from the structure above by clay lenses. Domestic wells, drilled from 60 to 200 feet deep, can

tap this excellent underground source, which will then rise in the casing to within about ten feet of ground surface.

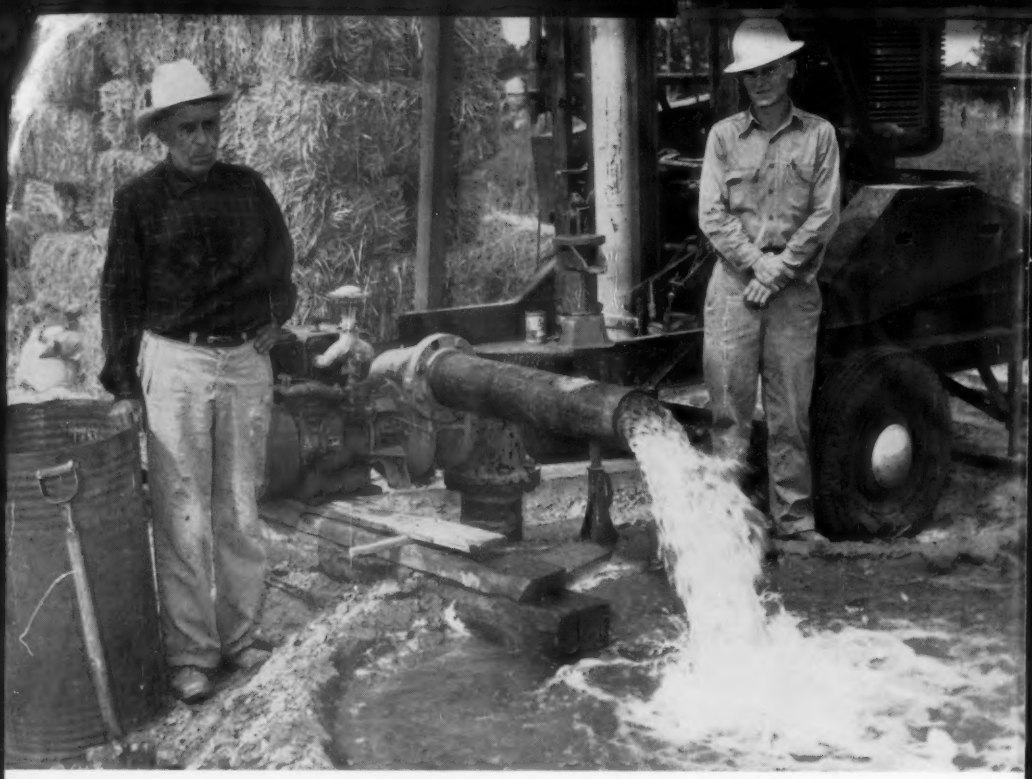
In the past, domestic wells of two, three and 4-in. diameter were customary. As the standard of living improved in the valley, however, the trend has been toward bigger wells. Three-inch diameter is about the minimum now, and there are many more four, six and 8-in. holes. Instead of ¼-hp pumps, the people now use up to four times that much power, as much more water is used for the irrigation of lawns and gardens. The state of New Mexico now requires permits for the drilling or enlargement of domestic wells, and there has been a recent crackdown on the drilling of irrigation wells. While these measures are tough on drillers who make their living in that business, the regulations are designed to safeguard the exploitation of one of New Mexico's most valuable resources: the underground water in this valley.

Well Development Tricky

Although actual well drilling is a relatively easy matter in such a formation, the development of a good water supply is tricky business. For one thing, the economic status and tendency toward minimum requirements on the part of his customers makes the development of each well a careful matter. Lake must carry his casing down as he goes, must use exceptional care in locating his perforations, must drill each well with a minimum of mud, and must develop each hole by air surging to give a gravel packed effect around the casing. One of the most important rules of all is the business of never penetrating the first lens of impervious clay which lies just below the clean, sharp, water-bearing sand.

It was this combination of rules and circumstances which caused Lake to realize that the little 1-W drill might actually be superior to bigger machines for this particular use. Bigger machines with heavier tools could fracture delicate structures and take away the precise feel which Lake must have. The small open-end and dart type bailers which Lake uses on the 1-W can be handled with ease, and jiggled around to give him a precise feel of what lies far below the ground surface. His small casing driving head, which cinches up around a small-diameter drill bit, weighs only 160

As his son looks on, driller Lake drives the well casing down to firm bedding.



This 8-in. irrigation well, which Lake drilled for farmer Tom Garcia (L), was completed at 44 feet. It produced 500 gpm, "more water than Garcia ever saw."

pounds. Frequently his "rope socket" consists of two cable clamps and a half hitch. And all his drilling tools are considerably smaller than 4-in. diameter, chiefly to prevent suction of fine sands into the well during drilling.

Speedy Service

Lake moves his rig to the job promptly, on the date his customer has been promised, and gets to work as fast as he can. He spuds in to the static water level, using a drill bit which has been hardfaced with his own arc or oxy-acetylene equipment. At the static water level, and sometimes before if caving is bad, he begins to run casing with the hole. He frowns on the use of rusted pipe; tries to use good, slick steel casing—either all-welded or full-threaded with good steel sleeves.

According to Lake, the job of casing installation has often been helped by the use of about ⅓ sack of Aquagel for each 100 feet of well. The Aquagel is daubed on the pipe, especially around the leading edge of any joints or welds along the casing. It clings to the pipe for a long time, resists abrasion or wearing in the sand and gravel, and definitely helps to get the pipe down safely without deformation or distortion as the light, 160-lb. rammer drives it down.

Lake makes all possible speed from ground surface, until he picks up the first showing of water-bearing sand in the pure-water aquifer. He drilled a 2-in. well 60 feet deep recently, with

Lake has set his 1-W up in some "very tight places." This is an easier setup.

the 1-W, in only 45 minutes. On another location, he put down a 6-in. OD well 74 feet deep, including casing installation and perforation work, in six hours, 15 minutes. He figures as a rule of thumb that he can do two 100-ft. domestic wells per week in his spare time.

Perforation Technique Described

Lake's method of perforation consists of cutting ¼ to ⅛-in. slots with a cutting torch. About 36 slots per well is average. These are placed near the bottom to intercept the clean, soft water. The remainder of the casing is installed tight, without perforations, and in a short time seals itself in while various clay lenses in the upper zones settle around the pipe.

When the water-bearing sands show up, Lake slows down immediately and puts a mark on his drilling line to show exactly where the bottom of the casing is located. He never permits his drill points to punch down beyond the drill casing after that; there's too much danger of fracturing a thin, but good, clay stratum which would be thick enough to "set" the well and hold tight under air surging. Remaining drilling is a combination of bit work, bailing with an open end bailer, and further casing driving. Eventually the casing settles down on a solid clay layer, the hole is cleaned out completely, and the well is "set".

Obtains Use of Air Compressor

Lake has a low-cost but workable arrangement with a local municipality which owns a Chicago Pneumatic air compressor. In return for the use of this compressor whenever he needs it, Lake keeps their wells in good repair. When Lake gets ready to develop a well, he picks up the compressor, hooks it up with hose or jet pipe, and surges or works the well for as long as it takes to get rid of the fine sand and to develop good clean water. Air surging works the water back and forth and draws in all fine sand which will pass the perforations. After surging has been done for some time, the area around the perforations is surrounded with coarse gravel which will not pass the perforation holes. The fine sand which did pass is blown out by the air development process.

Working on Saturday, Sunday and at night on his own rig, sometimes hiring a driller to operate his older machine, and by day operating a

(Continued on page 74)

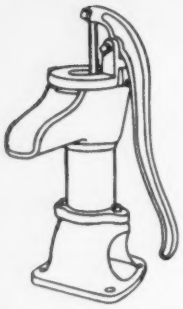


Fig. 1 — Pitcher pump

A "Right" Pump For Every Well

To get the best results from the wells you drill, it's important to install the right type of pump.

THE selection of proper pumping equipment is based on one of two main questions: (1) How much water is there and from what depth will it be pumped? and (2) What are the surface requirements?

Many types of pumps are on the market, each built to perform a certain service, so to classify them from all standpoints is virtually impossible. To many people a pump is a pump, regardless of its purpose or where and how it is used. For these reasons, the following discussion will be limited to

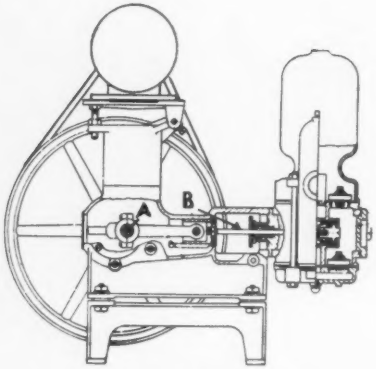


Fig. 2 — Reciprocating pump

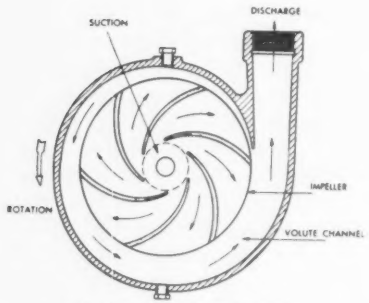


Fig. 3 — Centrifugal pump

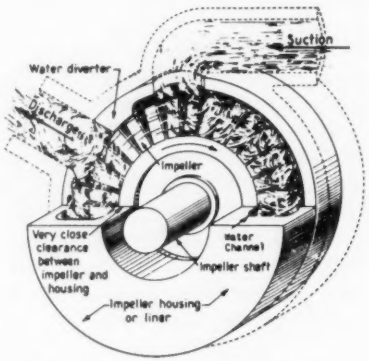


Fig. 4 — Shallow well turbine pump

This article based on material taken from "Water Well Drilling with Cable Tools"—by Raymond W. Gordon. Copies of the book are available at a cost of $2.50 from Bucyrus-Erie Co., Publicity Dept., So. Milwaukee, Wis.

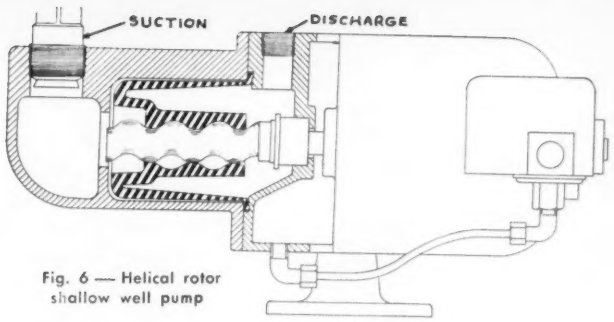


Fig. 6 — Helical rotor shallow well pump

pumps generally used in the water well drilling business. They fall into two broad classifications — *shallow well pumps* for lifting water from a depth of approximately 25 feet or less, and *deep well pumps* for lifting water from depths in excess of 25 feet.

Shallow Well Pumps

To explain briefly the above classification, let's look for a moment at the principles involved in drawing water from the ground. We all know that the atmospheric pressure at sea level is 14.7 pounds per square inch. We also know that a pressure of one pound per square inch is equivalent to a column of water 2.31 feet high. It follows from this that the theoretical number of feet that water can be drawn by suction lift under perfect conditions is 14.7 x 2.31, or 33.95 feet. As altitude increases, however, suction lift decreases, because atmospheric pressure is less. So the theoretical suction lift in feet for any altitude may be computed by multiplying the barometer reading in inches of mercury by 1.132. Water, though, cannot be raised 33.95 feet at lea level by suction because no shallow well pump is built with the 100 per cent efficiency needed to produce a perfect vacuum. Type of pump, wearing parts, and water level changes govern the actual height at which suction or shallow

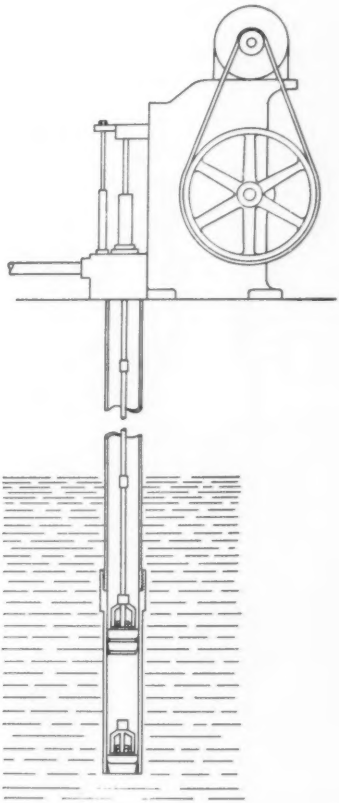


Fig. 5 — Reciprocating deep well pump

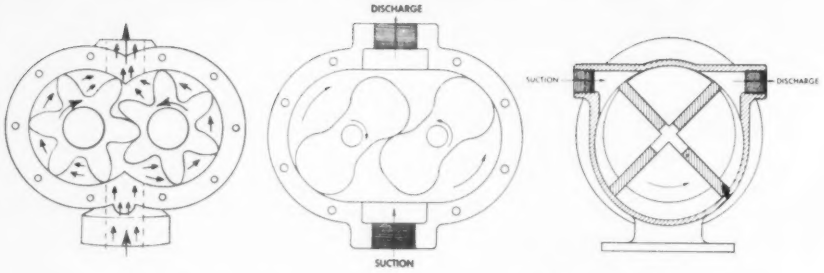


Fig. 7 — Rotary pump impellers: open, semi-closed, and closed

well pumps will operate over a period of time.

In normal practice, pump efficiency varies between 60 and 85%. A shallow well pump is said to "break suction" when its efficiency drops or the water level changes, and the atmospheric pressure is not sufficient to raise the water to the pump. All types of shallow well pumps on the market are based on the principle of creating a partial vacuum which, by the arrangement of working parts, draws water to the surface. We shall describe some of these briefly.

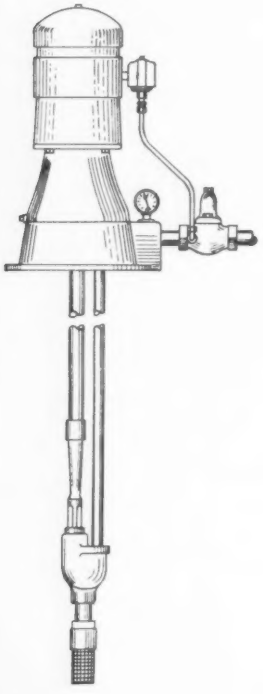


Fig. 8 (left) — Deep well jet pump

Pitcher Pumps (Fig. 1).

This is the simplest of all suction pumps. It is arranged with the pumping cylinder built into the stand. As the handle on this cylinder is raised, the plunger valve at the bottom of the short sucker rod opens. When the handle is forced downward the plunger valve closes and the check valve located at the base of the pump opens. This action creates a vacuum inside the drop pipe below the pump which, upon continued operation of the handle, draws water to the surface.

These pumps require priming for starting. Priming is accomplished by applying water on top of the plunger valve to effect a seal, thereby aiding in creating the vacuum needed. This is a type of reciprocating pump and variations of design using motors for

power, enclosed cylinders, etc. may be purchased.

Reciprocating Pumps (Fig. 2).

The reciprocating shallow well pump is often called the plunger or piston-type pump. It makes use of a piston which moves back and forth horizontally or vertically. In Fig. 2, as the piston (B) moves to the right, it creates a vacuum at the left end of the cylinder. The vacuum thus created allows atmospheric pressure on the surface of the water to force water up through the drop pipe (A) and suction valves into the cylinder. When the plunger reaches the end of its stroke, the cylinder is full of water. As it reverses direction, the suction valves close, forcing water out to discharge finally for use. Water is delivered alternately from both ends of the cylinder because the right end of the cylinder is designed in the same way as the left.

Variations of this principle are incorporated in designs using more than one piston, operating either horizontally or vertically. The capacity varies with the size of cylinder, number of cylinders, operating speed, and length of stroke. The diaphragm pump so widely used by contractors for dewatering is another design of the reciprocating pump. Capacities range from 250 gph to some 4,000 gph. Normal operating discharge pressures do not exceed 40 or 50 pounds.

Centrifugal Pumps (Fig. 3).

The centrifugal pump utilizes the principle of centrifugal force to lift water, its essential part being a rotating member enclosed in a case. This rotating member, called the *impeller,* is fixed on a rotating shaft and is direct-connected through a flexible

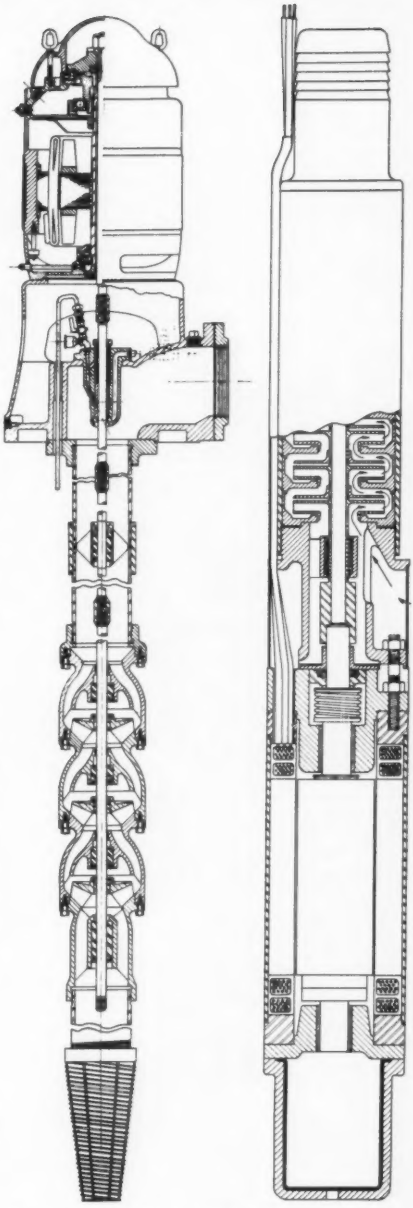


Fig. 9 (left) — Deep well turbine pump
Fig. 10 (right) — Submersible pump

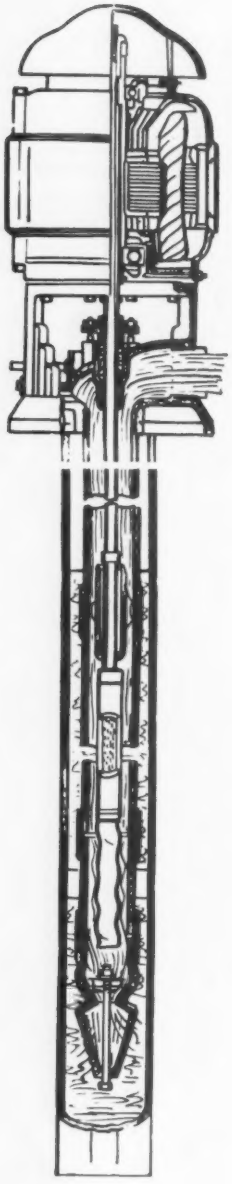


Fig. 11 — Helical rotor deep well pump

coupling to an electric motor, but may be supplied with a pulley for belt drive. Its case is designed to admit water into the center of the impeller. Water is thrown outward by high-speed rotation of the impeller into a curved circular passageway called the volute, then on to the discharge outlet. Movement of water from the impeller causes a partial vacuum at its center, and atmospheric pressure on the surface of the water source forces additional water up the drop pipe to the impeller to replace water forced out through the discharge opening.

These pumps must be primed by filling the entire system — case and drop pipe — with water. A bottom foot or check valve on the lower end of the drop pipe allows the system to be filled.

Single stage centrifugal pumps are constructed with one impeller, while multistage centrifugal pumps use several impellers for higher service requirements.

Shallow Well Turbine Pumps (Fig. 4).

The rotating member or impeller of this pump has a series of blades or fins on its outer edge which may be adjustable to maintain close tolerance and to take up wear. Its design permits development of much higher pressures than those of centrifugal pumps. Once its case is filled with water, this pump will operate without priming because it has the ability to pump air. With capacities ranging to some 6,000 gph, it will deliver water against pressures up to 150 pounds per square inch.

Rotary Pumps (Fig. 7).

Under this classification we find pumps of the gear, cam, and paddle or vane type. Rotary pumps literally scoop water from the pump chamber

to form a vacuum, which in turn forces water by atmospheric pressure to fill the voids created and to discharge water as the blades or gear teeth revolve. Capacities are governed by speed and width of teeth of the gears or vanes. Generally the gear pump is intended for slow-speed operation and when it is used for pumping water, the water must be clean and free from sand or grit.

Helical Rotor Shallow Well Pump (Fig. 6).

Like the gear pump, the helical rotor is a positive displacement pump. Its metallic rotor turns in a rubber stator and rotor action is continuous. The resulting flow of water is uniform.

Deep Well Pumps

In all deep well pumps, water is pushed upward by a submerged vehicle. Among the deep well pumps are reciprocating, jet, turbine, submersible, helical rotor, and air lift.

Reciprocating Deep Well Pumps (Fig. 5).

The vehicle in the reciprocating class of deep well pumps is a single or double acting cylinder fitted with a foot or bottom check valve, a plunger valve operated through the pump rod by a device called the working head. Its pump rod operates within a line of drop pipe to deliver water to the surface discharge. The working head may be one of several designs including the pump jack, windmill, and electric or gasoline powered. Capacities are governed by length of stroke, inside diameter of the cylinder or working barrel, and number of strokes per minute.

These pumps may bring water up from depths as great as 400 or 500 feet. The discharge pressure is limited only by the strength of the equipment and available power.

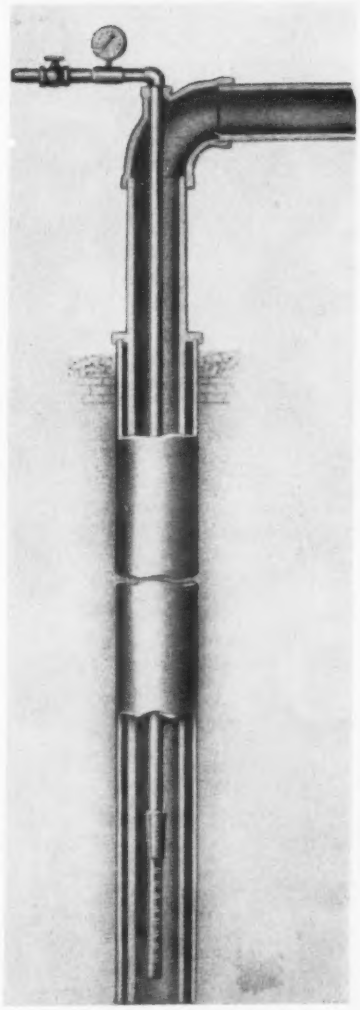


Fig. 12 — Airlift pump

Deep Well Jet Pumps (Fig. 8).

This jet pump consists of a motor-driven centrifugal pump mounted at the surface, a submerged jet assembly

(Continued on page 44)

Why you should put the highest-priced SUB in the hole

In submersibles Goulds quality doesn't cost much more . . . *and it pays off in the long run.* Here's how—

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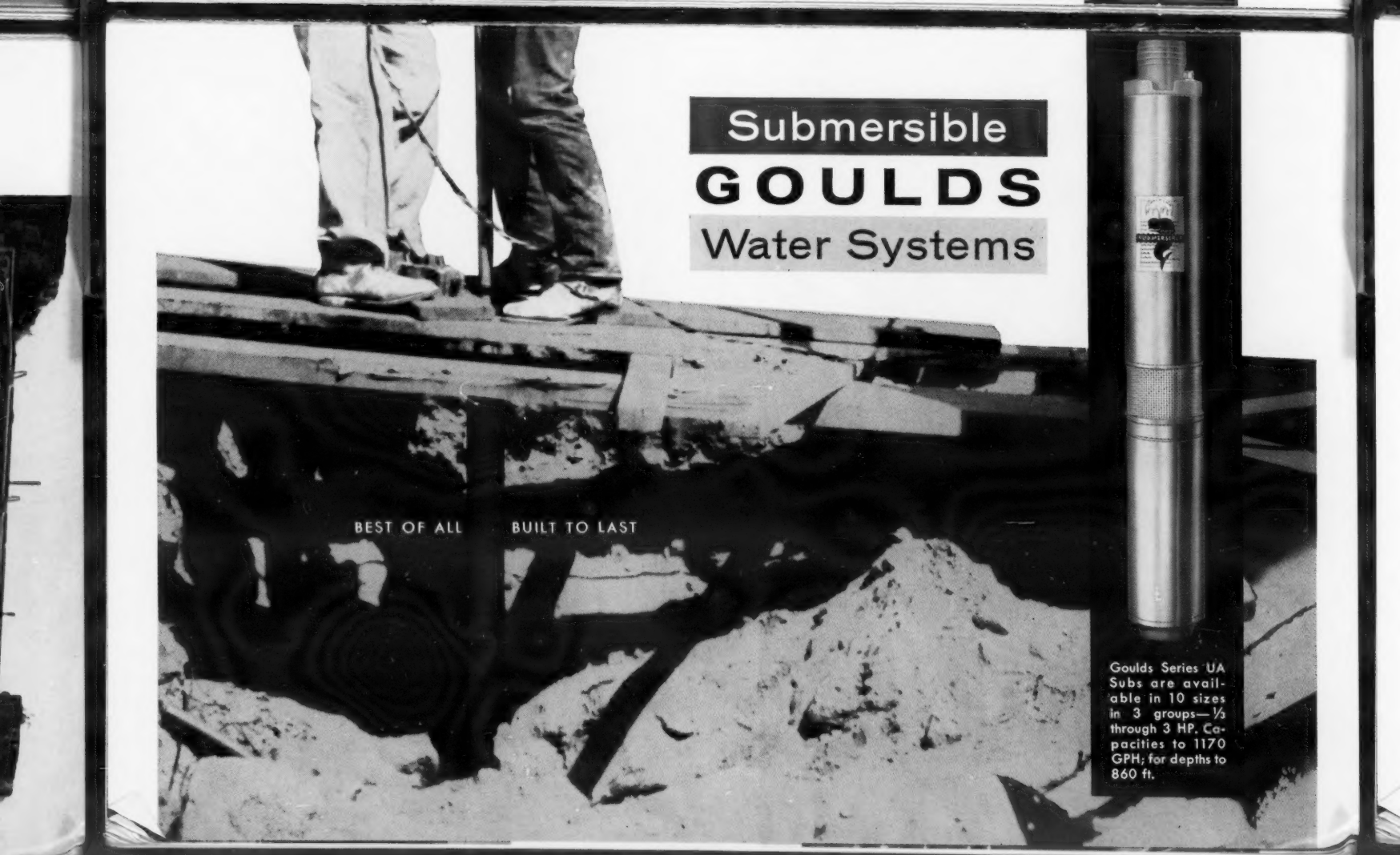
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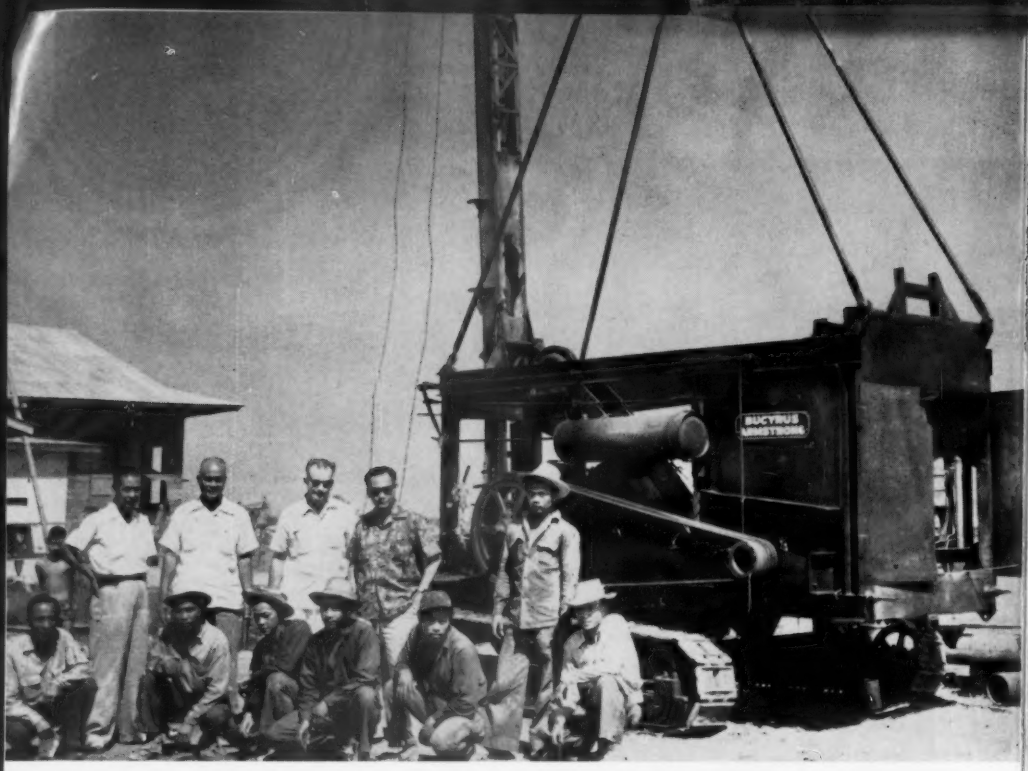


Posing in front of the Bucyrus-Armstrong 29-T are (from left, back row) C. P. Morada, Mr. Carlos, G. E. Foster and P. J. Navarro. The balance of the men are members of the drilling crew. The machine is kept operating two shifts per day.

Old Faithful 15822

Captured by the Japs in 1941, this Bucyrus-Armstrong 29-T is now back at its old job drilling water wells in the Philippines.

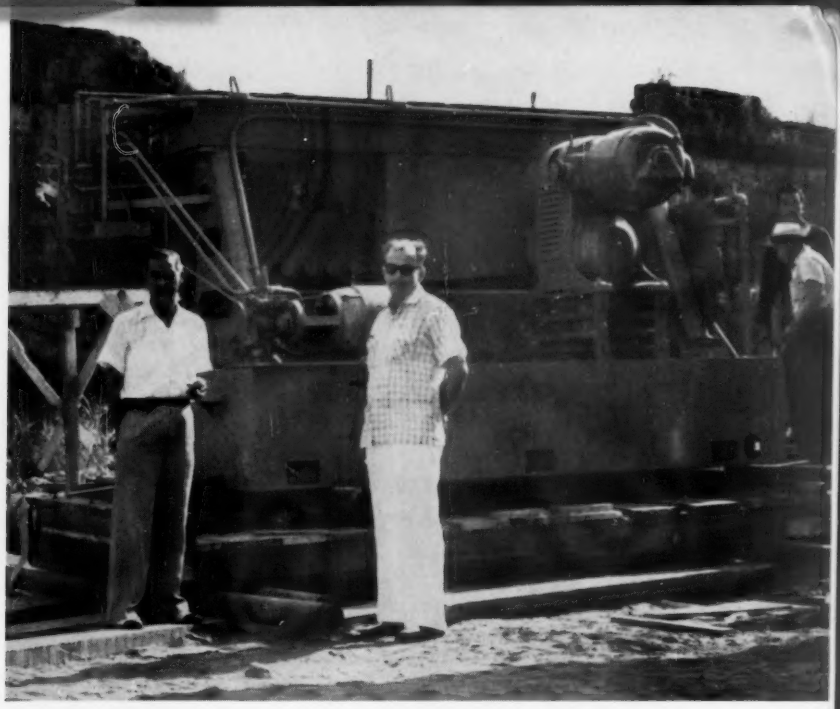
*by G. E. Foster**

THIS is a story about a faithful drill rig in the Philippine Islands that is still one of the island chain's best-performing rigs out of a total of 326 units.

The machine is a 29-T No. 15822 Bucyrus-Armstrong with a Caterpillar Diesel Engine. Originally, three of these units were working in the Masbate gold mines. They were purchased by the Philippine government and put to work drilling municipal wells.

The Japs captured these rigs in 1941. They stripped two of these units, using the motors for marine power plants. No. 15822 and its operator, Mr. C. P. Morada, were put to

**Mr. Foster is employed as Well Drilling Supervisor to the Philippines by the International Cooperation Administration, United States Operations Mission to the Philippines. He formerly owned the Foster Well & Pump Co., Sonoma, Calif.*



This shows the National Waterworks and Sewage Authority installing an Allen Pipe Slotting Machine supplied by the International Cooperative Administration. The wall in the background surrounds the **Intramuros** or **Walled City of Manila.**

work in the Province of Batangas drilling wells for the Jap Army. During these war years, the Japs had no diesel or lubricating oils. For almost three years, coconut oil was used for lubricating the rig and engine. The motor was started with alcohol and operated by coconut oil heated over a wood fire. It was necessary to clean the screens in the fuel system several times a day. This is probably the reason that, after 19 years of continuous use, it has finally been found necessary

(Continued on page 61)

Standing in one corner of the Bodega Manila (storage yard) are G. E. Foster, ICA Drilling Advisor (left) and P. J. Navarro, Chief, Wells and Springs Division.

Why By-Pass Your Share Of This $67,000,000 Pump Market!

Cross-country statistics assembled for the May "National Water Systems Month" have uncovered a startling fact: one of the most profitable and fastest-growing pump markets is in the replacement field. Over 272,000 (worth $67,000,000) should be replaced in 1958, 308,000 in 1959...and on up to 491,000 in 1962.

Obsolescence—from old age, lower water tables, larger families, new appliance loads, and other demands of modern living—is taking over.

A major share of this replacement will be handled by the convertible jet pump. And profit-wise dealers will be meeting this challenging sales picture with the famous Fairbanks-Morse line. Here's why:

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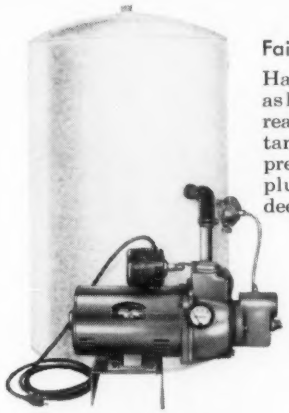
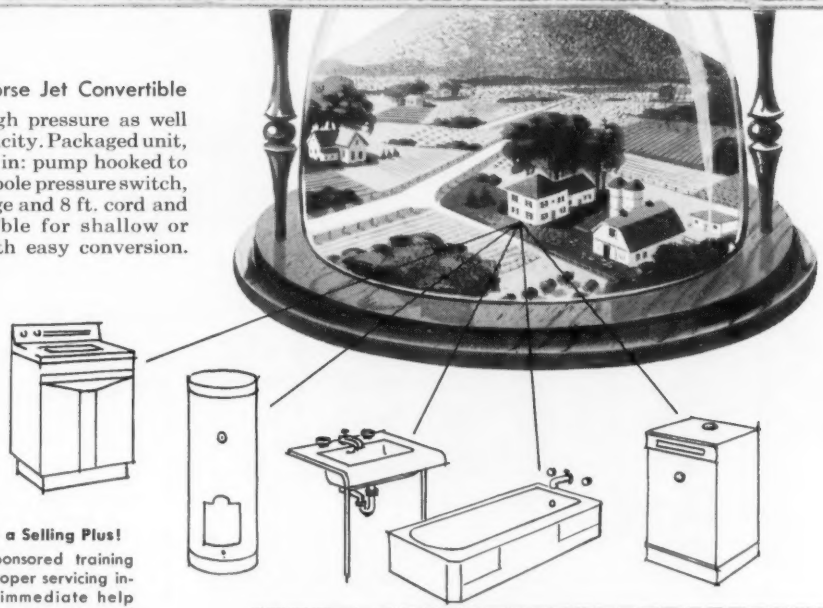
- A complete line to close every sales opportunity

Gear yourself for this fast-moving market—just mail coupon below for all the facts about a profit-making Fairbanks-Morse Dealership—service plan, training, new products, and advertising.



Fairbanks-Morse Jet Convertible

Has extra high pressure as well as higher capacity. Packaged unit, ready to plug in: pump hooked to tank, double pole pressure switch, pressure gauge and 8 ft. cord and plug. Available for shallow or deep well with easy conversion.



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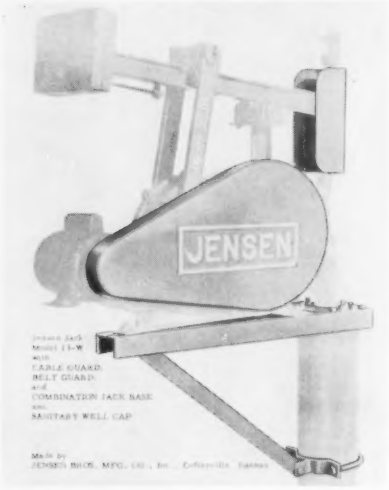
News of the month

Three New Accessories for Jensen 13-W Water Well Jack



Three new accessory items for the Jensen 13-W water well pump jack have recently been introduced by the Jensen Bros. Mfg. Co., Inc., Coffeyville, Kans. The new items are a cable guard, a belt guard and a combination jack base and sanitary well cap.

The cable guard and belt guard can be quickly attached for added safety.

The combination jack base and sanitary well cap has been developed for fast, easy installation; no foundation is needed. It raises the Jensen Jack entirely off the ground; surface water, dirt and other impurities are locked out of the well, so water stays clean and pure, the company claims.

The junior-sized Jensen 13-W is the smallest of 14 Jensen water well jacks. It stands about 28 inches high, or just above the knee of an average-sized man. It is reported to be ideal for almost any home, ranch or farm pumping system where extreme depth is not required.

Bucyrus-Erie Names Finley Drill Sales Representative

Jerry D. Finley has been appointed water and oil well drill sales representative for the Evansville (Ind.) territory by Bucyrus-Erie Co., South Milwaukee, Wis. The appointment was effective beginning April 1.

Finley, 24, will reside in Evansville. The Evansville territory includes the states of Indiana, Kentucky, Ohio and West Virginia, the province of Ontario and parts of the following states: Illinois, Iowa, Maryland, Michigan, Missouri, New York, Pennsylvania, Tennessee and Virginia.

Finley joined Bucyrus-Erie's drill sales department in August 1956 as a special apprentice. Until his current appointment, he had been handling special assignments since December 1957. In between, from April to August 1957, he served as a second lieutenant in the artillery.

He received a B.S. degree in industrial administration from Iowa State College in 1956.

Finley formerly worked for several oil companies as a tool dresser, roughneck and driller, both on rotary and cable-tool rigs.

He is married and the father of two

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children, Larry Don, 3, and Karen Ann, 1.

Broader Application Possible With New Penn Supercharger

The *Penn Supercharger* is a device which assures positive air charging of pressure tanks on domestic water pumping systems. A new feature in the latest model *Type 194R Supercharger* permits application on all popular sizes of submersible and jet pumps, according to the company. In applying the earlier model to larger sizes of submersibles and multi-stage jets, excessive discharge and service line pressure was possible during the air charging cycle at the usual flow rate of two to 2½ gpm.

The new model contains a simple flow relief arrangement which avoids excessive build-up of service line pressure. The *194R,* when applied to centrifugal, jet or submersible pumps with discharge capacities ranging from five to 23 gpm against a tank pressure of 20 pounds, prevents service line pressure in excess of 75 pounds during an air charging, or normal pumping cycle.

Write for descriptive bulletin to Penn Controls, Inc., Dept. TD, Goshen, Ind.

Tait Purchases Land For Future Expansion

A 57-acre tract of land adjoining the Gettysburg, Ohio, branch of The Tait Manufacturing Co. has been purchased by the pump firm for possible future expansion, according to a company spokesman.

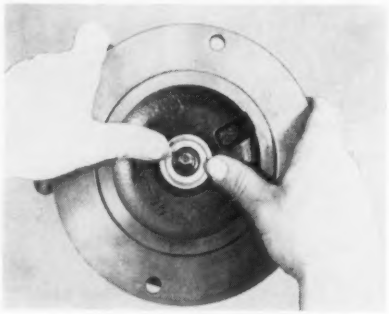
The Gettysburg branch was opened in May, 1957, exclusively for the development and manufacture of submersible pumps. Since that time, two expansions have been made at this branch, which is operated in leased quarters.

Tait manufactures both 2-wire and 3-wire models for 4-in. and larger wells. The 2-wire models, available in motor sizes ranging from ¼ to one hp, meet the needs of both shallow and deep wells, 0 to 360 feet in depth. The 3-wire models, ranging from ½ to three hp, serve wells to 500 feet in depth.

All models have the exclusive *Double Life* stage design, which is claimed to enable the pump to handle quantities of sand which are often encountered for a brief period immediately after the well has been bailed out.

In Tait's Dayton plant, jet and piston-type water systems are manufactured, as well as cellar drainers and water softeners.

No-Drip Shaft Sealing Developed for Pump Line



Announcement has been made by Besler Corp., Emeryville, Calif., of the development of a unique, no-drip, shaft sealing for its line of Dorward jet pumps.

This patented seal is reported by

(Continued on page 62)

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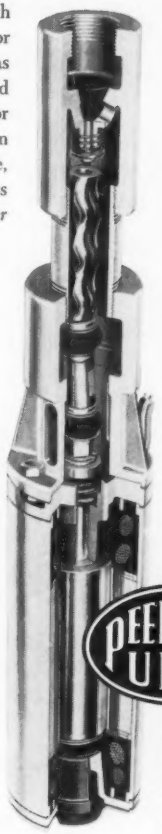
SUBMERSIBLE PUMP

Worry-free, minimum maintenance pumping is what you sell with the Peerless Dynaflo submersible pump! No rods, jets, shafts or impellers to wear out; the unique lifetime-lubricated Dynaflo has only one moving part—the stainless steel rotor. Rotating in a hard rubber stator, the rotor transmits the water through the stator stages into the discharge chamber, efficiently and *silently* in capacities up to 1680 gph from wells up to 400 ft. deep. Positive, foolproof and full-flowing, this member of the famous Peerless domestic water system family means *better pumping for your customers, more profit* for you! Sell the finest—sell Peerless.



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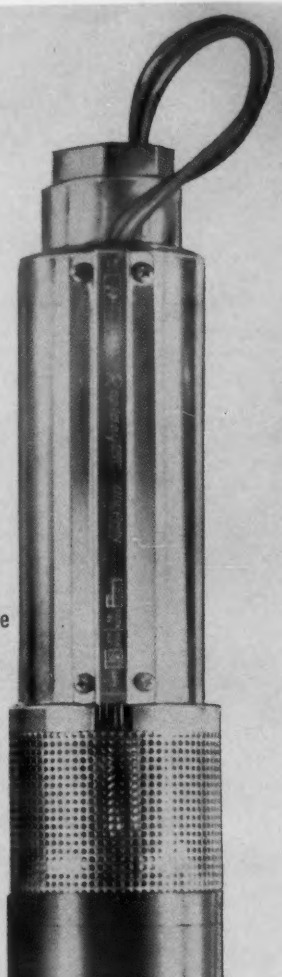
Now, for the first time, there's a submersible pump for the BIG VOLUME market—a submersible that can meet the needs of all the domestic installations in your area—both shallow and deep wells, 4" or larger, 0 to 360 feet. It's the new Rapidayton 2-wire Dolphin* submersible with **advanced simplified** design which eliminates installation and service problems. Gone are water-tight splicing problems, since cable (60, 80, or 100 ft. long, depending on horsepower) is attached to pump at factory. Gone is the control box; you merely connect cable to simple overload protection box (furnished) at top of the well. For big volume, high profit, and easy installation, sell the new Rapidayton 2-wire Dolphin submersible.

YOU HAVE YOUR CHOICE!

3-wire Dolphin submersible models are also available from Rapidayton in three 4" series up to 3 h.p. for wells 0 to 500 ft.

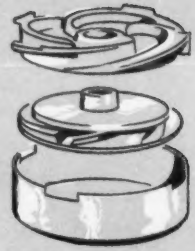


DOUBLE LIFE STAGE DESIGN

The Rapidayton 2-wire Dolphin submersibles have the same exclusive

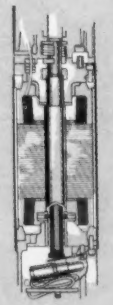
DOUBLE LIFE STAGE DESIGN

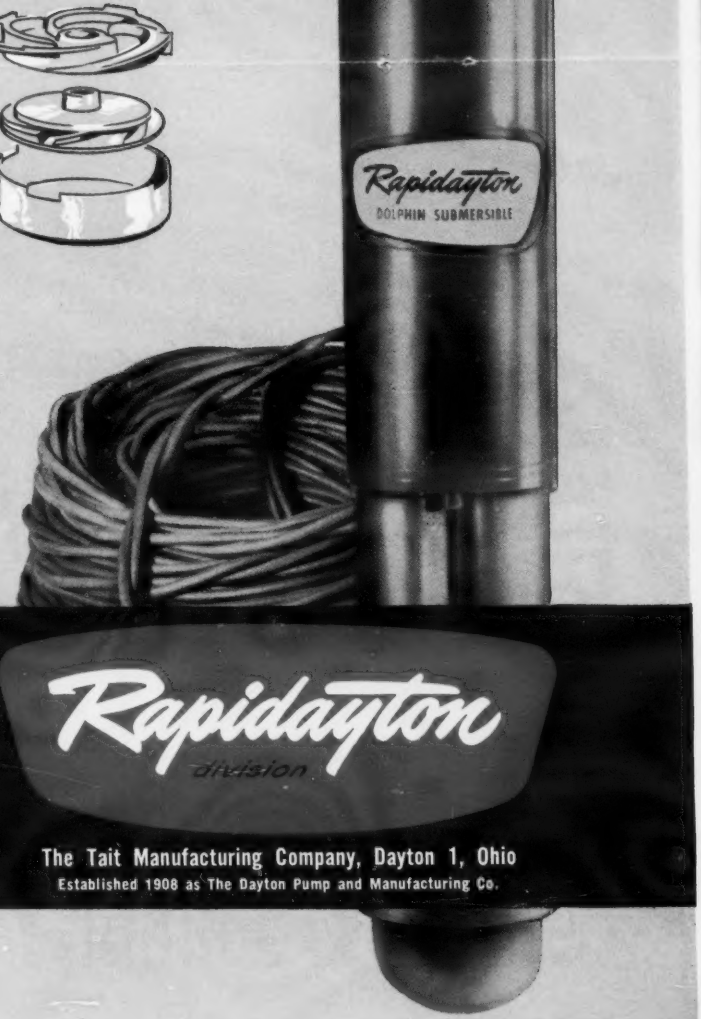
The Rapidayton 2-wire Dolphin submersibles have the same exclusive "Double Life" stage design as the 3-wire models now in dependable service from coast to coast. The "Double Life" design makes use of tough nylon for impellers. This construction, providing "loose" tolerances over first 20 days during which nylon is expanding to a predetermined limit, insures maximum protection against sand, higher efficiency, and longer life.



"PLUS POWER" MOTORS

The Tait-designed and made motor used in the 2-wire Dolphin submersibles is built for extremely high efficiency and "plus power." It operates just like a conventional capacitor-type jet motor. The hydraulic starting switch (with special mercury cut-out) permits use of super size capacitor, assuring high-torque starts. Dielectric fluid-filled. Electronically tested. Motor parts vacuum impregnated with resin.





FOR WELLS 0 TO 360 FT.

The complete 2-wire line of Rapidayton submersibles includes 11 models, each available as pump only models or as complete systems with 42-gallon tanks which meet FHA requirements. They are: Deep-Setting models in ¼, ⅓, ½, ¾, 1 h.p.; Mid-Range in ⅓, ½, ¾, 1 h.p.; High Capacity in ¾, 1 h.p.

¼ h.p. pump, including attached cable and overload protection box, retails for $169.50

Rapidayton division

The Tait Manufacturing Company, Dayton 1, Ohio

Established 1908 as The Dayton Pump and Manufacturing Co.

from the MAILBAG

This page is open to any of our readers having questions to ask relating to drilling, driving pipe, dressing bits, etc. All letters will be answered promptly by experienced drillers and engineers, who are qualified to give intelligent advice on these subjects. We will publish as many letters of general interest as space will permit. Address: The Driller, South Milwaukee, Wis.

Formula for Figuring Pipe Capacity

Dear Sirs:

Perhaps you can answer a question for me. I would like to know how to go about figuring out the water capacity per foot in holes of various diameters. I am on an 8-in. hole and am carrying about 130 feet of water. How much could I say I have in reserve at that depth? What would be the capacity for a 5⅝-in. hole? I would appreciate any help you are able to give me.

C.R. Pa.

Dear Sir:

To accurately compute the capacity per foot of water in a 5⅝ or 8-in. hole, you must know the exact inside diameter of the casing or well that is being measured.

To find the capacity of a pipe or cylinder, first multiply the area in inches by the length in inches. This will give you the content in cubic inches. Then divide this amount by 231 (the cubical content of a U.S. gallon in inches); this will give you the capacity in gallons.

To find the area, multiply the square of the diameter by 0.7854. Using this equation, it will be found that the capacity of a 5⅝-in. well, 130 feet deep, will be approximately 168 gallons, or 1.29 gallons per foot. By the same equation, the capacity of an 8-in. well or pipe, 130 feet in length, comes to approximately 340 gallons, or about 2.61 gallons per foot.

The amount of water a pipe of given diameter will hold should not be confused with the amount of water which can be obtained through a pipe of equal diameter in any given formation. The yield of a well can only be determined by making a pumping test to determine drawdown.

The question is frequently asked, "How much water can be pumped out of a 5⅝-in. well, or 8-in. well, etc." Before a reasonable answer can be given, a little basic study must be made of how a well reacts under pumping. This will depend, among other factors, upon how the well will be finished, whether it is in open rock or gravel hole, if perforated pipe is used, or if the well is screened, etc.

Dry Ice Helpful In Reviving Well?

Gentlemen:

I have a well to clean out that is about 1,050 feet deep. It flowed for about five years, then dropped to six feet below the top. I would like to know if dry ice would help to bring the flow back. If so, how much dry ice would I use and how would I go about putting it into the well? This well is located in South Dakota. Any information you can give me will be greatly appreciated.

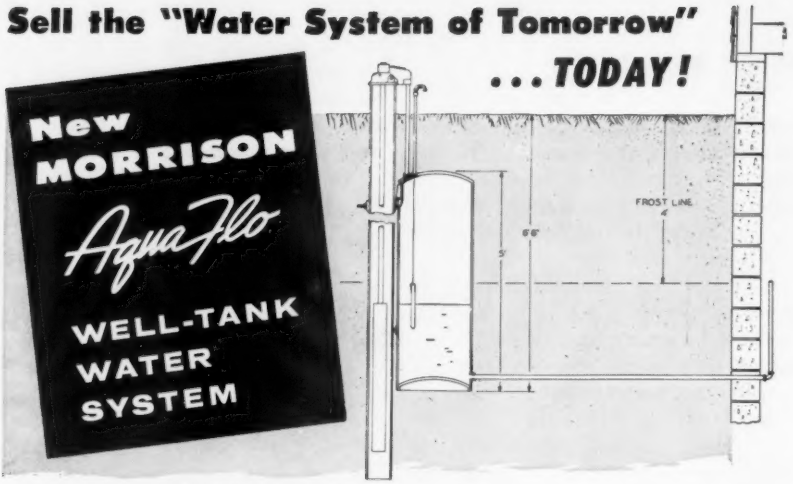
L.E. Iowa

Dear Sir:

Before doing anything with this well, you should determine whether or not the static level of the water has been lowered. Perhaps it has gone down to a point where the flow can no longer be obtained. A check on

(Continued on page 42)

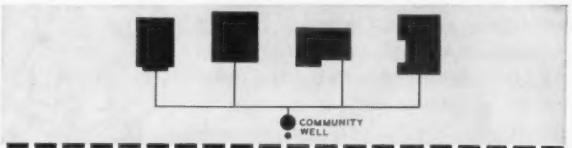
Sell the "Water System of Tomorrow" ...TODAY!



FIRST All-at-the Well System!

Sell the "nearest thing to central water convenience" for faster profits, enthusiastic customers — with new MORRISON Aqua-Flo WELL-TANK SYSTEMS! New exclusive Well Head Unit permits burying tank *right at the well.* Avoids pressure tank nuisance in the home, avoids pump house or pit, lost space, extra adapters, conduits, extra welding. Well Head Unit fits well casing without welding or cutting, includes built-in check valve, snifter-type air charger, junction box, tank intake connector, thermostatic heater and ports for ventilation and service. You save installation time and labor, do a better job faster.

Check ALL the advantages of the new Aqua-Flo WELL-TANK SYSTEM NOW. Fits well casings from 4″ to 7″ *without adjustment.* Tank sizes, 60, 120 and 265 gallons. Use with submersible pumps. Meets all sanitation codes. Provides a "main" type water system often at savings of hundreds of dollars for your customer.



New Aqua-Flo Well-Tank System simplifies water supply to other buildings.

Be FIRST in your town with the *latest!* Check the Coupon for the whole story.

THE *Morrison* COMPANY

Dept. D, 125 W. Melvina St., Milwaukee 12, Wis.

Quick! Tell us more about the advantages of the new MORRISON Aqua-Flo Well-Tank "Water System of the future."

Name .....

Address .....

City ..... **State** .....

Attention of .....

Mailbag . . .

(Continued from page 40)

other wells in the neighborhood should answer this question. If you find there are other flowing wells nearby, you can then consider putting the drill over the old hole and cleaning it out.

Dry ice has proved effective in opening up the pores in certain formations by setting up a surging action which loosens the incrusted material and permits the water to enter the well more freely, provided there is water available. We doubt, however, that dry ice would help in your case, considering the depth and amount of water in the hole.

Chemically, dry ice, as you perhaps know, is carbon dioxide gas which is pressed into a solid form. When dumped into the water in a well, the dry ice changes from a solid to a gaseous form rapidly, and with considerable pressure. This sets up a surging action in the well, forcing the water back and forth through the water-bearing strata.

Dry ice is relatively cheap and easy to obtain, therefore may be worth a try, at least. The best results can usually be obtained if the ice is broken into small pieces. Ordinarily 10 or 15 pounds of dry ice will create enough gaseous pressure for the operator to judge the proper amount to use. If feasible, 25 to 50 pounds could be put into the well and results observed.

Acid treatment of the well may also help to increase the flow. This is a more specialized job and is quite an expensive undertaking.

In any case, if the trouble is due to a depleting water condition, it would be useless to attempt acidizing, dry ice, or anything else to restore the well to what it pumped originally. It might be that, by going deeper in this hole, the well could be revived to near what it was originally.

Steel Pipe Best For Well Casing

Sirs:

No doubt you are familiar with the tar-impregnated fiber soil pipe that is now on the market. Would it not be suitable for use as well casing under certain favorable conditions? I have in mind wells drilled through shale, rock and clay, cased to the bottom with properly perforated fiber pipe surrounded with gravel and equipped with a jet pump.

Do you know of any reason why this would not be good well construction? (I mean from the customer's standpoint, disregarding such matters as getting the string lowered into the well, sealing the top, etc.)

I have always used mud bailed from the well for a seal around the casing above the gravel to exclude surface water; would Aquagel be better for this purpose?

D.E.P. Ohio

Dear Sir:

We doubt the feasibility of using a tar-impregnated fiber soil pipe as a

(Continued on page 56)

"Without analyzing your water, I can see there's a lot of iron in it."

NEW from **ORANGEBURG**

A SUPERIOR **75**-POUND PLASTIC PIPE

No pinholing—It's completely slit-proof!

75-Pound Orangeburg SP Plastic Pipe —like Heavy-Duty Orangeburg SP Plastic Pipe—is made from a superior new-type resin.

Its molecular weight—which governs toughness and strength—is at least 30 times higher than other types.

To you, this means performance you can rely on to do the job better. 75-Pound Orangeburg SP is approved for drinking water service by the National Sanitation Foundation. It's ideally suited for well pipe, irrigation lines and other water services.

On your next job use 75-Pound Orangeburg SP and be sure. If your wholesaler does not have it in stock, a shipment can be made within one day.

Only 75-Pound and Heavy-Duty Orangeburg SP Plastic Pipe give you the advantages of this new slit-proof, pinhole-proof, high-molecular-weight resin. Its quality is backed by Orangeburg, a great name in pipe for 65 years.

ORANGEBURG MANUFACTURING CO., INC., Orangeburg, N.Y. ...Newark, Calif.

ORANGEBURG®
SP Plastic Pipe

APPROVED FOR DRINKING WATER SERVICE BY NATIONAL SANITATION FOUNDATION

Orangeburg SP Plastic Pipe is spirally wrapped in heavy kraft paper for convenient handling, clearly labeled and provided with a convenient rip cord for easy removal of wrapping. Sizes ½" to 2" in standard coil lengths.

Right Pump . . .

(Continued from page 27)

connected to the pump by two lines of drop pipe, a pressure pipe, and a suction pipe. When the system is installed and primed by filling entirely with water, the motor-driven pump forces water down the smaller diameter pressure pipe and up through the jet. This water pressure flows through the jet nozzle and jet venturi tube to create a partial vacuum within the jet body. Atmospheric pressure on the water in the well forces water into the jet body to fill this partial vacuum and it is carried along with the circulating water up the larger diameter suction pipe to the pump. The extra water brought up by the jet is discharged at the surface, while a certain amount of water is left in the system for continuous circulation.

Capacities vary with the size of drop pipes used, jet body, jet size, and venturi tube opening, as well as with the power required to drive a single stage, multiple stage, or reciprocating pump. Depth of setting largely determines discharge capacities of individual pumps; increasing the jet assembly setting results in less discharge. Settings up to about 200 feet are made with these pumps.

Deep Well Turbine Pumps (Fig. 9).

The deep well turbine pump is composed of a series of centrifugal impellers enclosed in cases, or "stages," driven by a vertical shaft extending from impellers to the working head at the surface. The shaft in turn is driven either by a vertical hollow shaft electric motor, by belt-driven pulley mounted vertically, or by bevel gears. This shaft may work through water-lubricated fluted rubber bearings or it may operate within an oil-lubricated tube fitted with bronze bearings.

Capacities vary with the size of stages, column pipe, and horsepower provided. Discharge may be affected by speed and discharge valve control because these pumps are usually designed to deliver maximum horsepower and efficiency at a single designated capacity.

Submersible Pumps (Fig. 10).

The submersible pump is a recent development in pumping water from deep wells. For operation, the entire pump assembly, including the motor, is lowered into the well to push water to the surface. Usually the motor is placed below the pump assembly with pump intake between the two. The motor is therefore always submerged. The pump assembly usually consists of a multistage centrifugal unit, the capacity of which is determined by the number of stages, horsepower and diameter.

Two types of motors are available —dry and wet. Dry motors operate within a hermetically sealed cage, running in a dielectric oil which completely fills the cage. Wet motors are lubricated by the water in the well. Their windings are sealed off by an inner liner to protect against the entrance of water. Because well water is the lubricant, this motor must operate in clean, clear water for long life.

Helical Rotor Deep Well Pumps (Fig. 11).

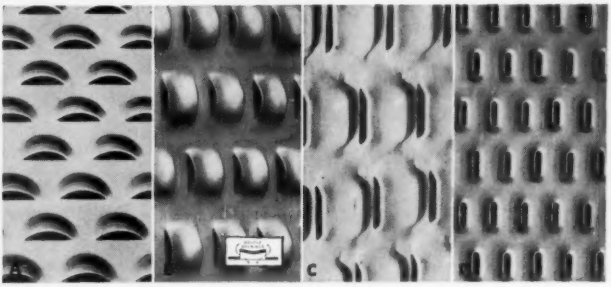
The helical rotor pump is a positive displacement pump composed of a rotating metal rotor within a molded rubber stator. The rotation of the rotor within the stator literally squeezes water up through the drop pipe or

(Continued on page 48)

STAINLESS STEEL

WELL CASING

Corrosion is stopped by welded stainless steel casing. If acid or alkaline soil conditions present a problem... then stainless steel well casing is your permanent solution.



4 Perforation Styles

A. LOUVRE. Louvre down keeps fine sand out. Very popular for gravel packed rotary drilled wells.

B. DOUBLE LOUVRE. Up to 50% more perforated area. Up to 8 ga. thickness, min. diam., 10". Very strong.

C. TWIN FLOW. Water enters from opposite sides of perforations 1/2" to 1" long, 1/16" to 1/4" deep.

D. STANDARD. Popular for fine sand at moderate depth. 3' to 21' lengths, as desired.

4 Field Joints

PLAIN END
For welding... popular for modern, quick assembly of black welded casing.

PLAIN END
With butt strap for fast field welding. Line-up holes insure true joining.

LAPPED JOINT
For riveting . . . popular for galvanized, riveted casing. Tapered ends, gang punched.

LAPPED JOINT
For bolting... 5/16" T-head bolts can be installed from outside.

Write for **FREE** well casing catalog.

THOMPSON PIPE & STEEL COMPANY

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Name..... Address.....

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You'll Sell More Plastex

because Plastex gives you more to sell!

FLEXIBLE PIPE

Plastex Polyethylene . . . in sizes from ½″ thru 6″ — 75 and 100 psi pressure rated — single and twin-tube types — lengths to 600′ — NSF approved.

SEMI-RIGID PIPE

Plastex Kralastic . . . in sizes from ½″ thru 6″ — for pressures to 150 psi and even greater chemical and heat resistance—10′ and 20′ lengths with plain ends, or sleeve-type coupling one end — NSF approved.

A COMPLETE LINE OF FITTINGS FOR BOTH

Packaged *Nylon* and *Styrene* insert-type, for mechanical coupling to flexible Plastex Pipe — *Kralastic* for solvent-weld coupling to semi-rigid Plastex Pipe — in every wanted style, ultra precision made, NSF approved.

AND NOW, DRAIN PIPE AND FITTINGS, TOO!

Plastex OX . . . high strength, high impact drain and sewer pipe — in 2″, 3″ and 4″ sizes — plain and perforated — with sleeve-type fittings for root-proof solvent-weld joints, or dry joints—10′ and 20′ lengths.

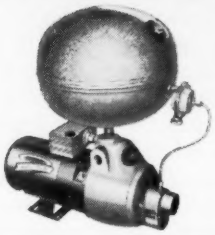
Let us send you complete information

THE PLASTEX CO.
SINCE 1939

3232 CLEVELAND AVENUE
COLUMBUS 24, OHIO

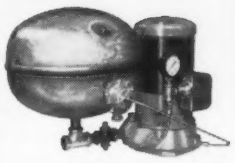
There's a BERKELEY PUMP to fit each of your customer's needs!

WATER SYSTEMS



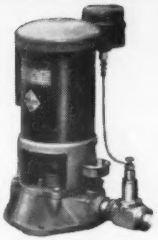
WATER-MATE SYSTEMS: Budget Horizontal convertible jet pump. Cap. to 1500 GPH. Depths to 100'. ⅓ to 1 HP.

Ask for Bulletin 1055



BANTAM-JET SYSTEMS: Budget vertical deepwell jet pump. Capacities to 1800 GPH. Depths to 140'. ⅓ to 1½ HP.

Ask for Bulletin 1103



VERTICAL JETS: Deliver up to 1500 GPH from 150'. Up to 5000 GPH maximum. ⅓ to 5 HP models.

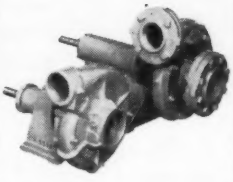
Ask for Bulletin 1105

SUBMERSIBLES

BERKELEY SUBMERSIBLES: 4" or larger sizes. Efficient deep-well pumping units. Up to 4500 GPM Depths to 1000'.

Ask for Submersible data.

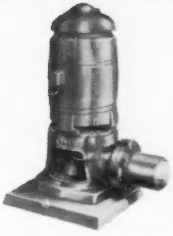
SPRINKLER PUMPS



BERKELEY SPRINKLER PUMPS: Motor, engine or belt drive. Cap. to 4000 GPM. Heads to 180 PSI. 1 to 200 HP.

Ask for Sprinkler Pump Data.

TURBINES



BERKELEY TURBINES: Wide range of sizes—4" to 24" models. Capacities to 10,000 GPM. 1½ to 250 HP.

Ask for Turbine Data.

No two customers are alike in their requirements. Full-line Berkeley dealers sell more because they sell a complete line. Now is the time for you to become a Berkeley dealer. Write today for details and discounts.

BERKELEY PUMP COMPANY

P. O. Box 7, Station A, Berkeley, California

FACTORIES IN:

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Berkeley PUMPS & WATER SYSTEMS

SELL THE COMPLETE LINE — SELL BERKELEY

stock 3 items

Adapto-Jet Pump, SW venturi

sell 5 pump jobs

McDonald's Minimum Inventory Maximum Application Plan keeps stocks low, sales high. You supply the right pump for any one of these five jobs and stock only three items.

JOB #1. suction lift.....25′
capacity.....up to 875 GPH
pressure.....up to 59 PSI
Pump—McDonald Adapto-Jet with SW venturi

JOB #2. suction lift.....25′
capacity.....up to 597 GPH
pressure.....up to 72.8 PSI
Pump—McDonald Adapto-Jet with "L" venturi

JOB #3. suction lift.....25′
capacity.....up to 364 GPH
pressure.....up to 100 PSI
Pump—McDonald Adapto-Jet with "H" venturi

JOB #4. suction lift.....50′
capacity.....up to 813 GPH
Pump—McDonald Adapto-Jet with "L" venturi and jet assembly in well

JOB #5. suction lift.....80′
capacity.....up to 600 GPH
Pump—McDonald Adapto-Jet with "H" venturi and jet assembly in well

For further information mail a card to

A. Y. McDONALD MFG. CO.

Dubuque, Iowa

PUMPS • BRASS GOODS
DRAINS • OIL EQUIPMENT

Right Pump . . .

(Continued from page 44)

column pipe to the surface in a continuous, uniform flow. Available in capacities to 60 gpm, the pump attains high head pressures. It will operate in water of high abrasive content with little evidence of wear.

For distribution, the discharge from any of the foregoing pumps can be put into pressure-controlled tanks, catch basins, open tanks, or pipe lines. Because of its cleanliness and sanitation, the closed system of pressure-controlled tank service is preferred for domestic uses. Catch basins leading to open trenches are often used for irrigation systems.

The selection of a permanent pump should be made according to capacity desired, depth of the well, pumping or dynamic level of the well, total head in feet against which the pump must operate (taking the friction loss in piping into consideration), type of power to be used, and amount of horsepower required.

Air Lift Pump (Fig. 12).

To lift water from a well, compressed air reduces the specific gravity of water so that atmospheric pressure will cause it to rise in a pipe. The size of compressor, power unit, and piping equipment should be carefully selected to obtain maximum efficiency for permanent installations.

Probably the most common air lift pump in use today is composed of two pipes, one of small diameter used as an air line from the compressor, and one of larger diameter used as the discharge column. The air line may be installed inside or outside the discharge column. If it is placed outside, the bottom end is provided with a

Table 1 — Drop Pipe and Air Line Size Relationships

Diam. of Well (In Inches)	Diam. of Drop Pipe (In Inches)	Diam. of Air Line (In Inches)	Pumping Rate (In GPM)
3½ or larger	2½	¾	30 - 60
4½ or larger	3	1	60 - 75
5 or larger	3½	1¼	75 - 100
6 or larger	4	1½	100 - 150
8 or larger	5	1½	150 - 250
8 or larger	6	2	250 - 400
10 or larger	8	2½	400 - 700
12 or larger	10	2½	700 - 1000

short length of return pipe inserted in the bottom of the discharge line. Better results are obtained by perforating the bottom of the air line with small holes to provide better diffusion and mixing of air with the water.

For best results without undue loss of air pressure and friction, the drop pipe and air line should be relatively close in size to the diameter of the well. Many combinations of pipe sizes may be used, but Table 1 serves as a guide to good selection.

Submergence of pipe lines should be from about 40 to 70 per cent of the total lift measured from the static level. (To determine the submergence in any well, divide the distance the air line is under water by the total length of the line and multiply by 100.) Low lifts require more submergence than high lifts. Table 2 indicates submergence required for various lifts.

Compressor manufacturers provide tables for determining equipment sizes. Table 3 is for submergences of 50 and 66⅔% — 10 gpm capacity.

The following example will illustrate the use of the tables:

What size air line, drop pipe, and compressor are required to pump 100 gpm from a 300-ft. well with a static level of 60 feet and dynamic level of 80 ft?

In a well with these characteristics, drawdown is 20 feet. From Table 2 we find that a submergence of 66⅔% will be required for this lift.

To provide 66⅔% submergence, twice as much pipe will be under the dynamic level as above it. Thus

(Continued on page 52)

Table 2 — Submergence Required for Various Lifts

Lift (In Feet)	% Submergence	Lift (In Feet)	% Submergence
Up to 50	66⅔	200 to 300	50
50 to 100	60	300 to 400	45
100 to 200	55	400 to 500	40

"25 years in the well drilling and pump business has taught us to rely on CLAYTON MARK"

As advertised in Saturday Evening POST and FARM JOURNAL

Dual Jet Pump

Stroke Pumps

3-Way Jet Pump

Submergible Pumps

Foot and Check Valves

Pitless Adapters

Drive Shoes

Well Seals

That's what Peter Pilgard had to say when asked why he had standardized on Clayton Mark Well Supplies and Pumps. He stated further, "We have had less trouble both in installing and servicing Clayton Mark equipment than any other brand we have ever used. Another thing, we get fast service from Mark distributors."

At the present time Mr. Pilgard has four operating well rigs and eight men covering the Northwest Chicago area where they install hundreds of Clayton Mark Pumps a year. Besides these pumps, Mr. Pilgard uses Clayton Mark drive shoes, check valves, cylinders, pitless adapters, and well seals.

YOU, TOO, can enjoy the extra profits that result when costly call-backs are eliminated by standardizing on well supplies and pumps made by the world's oldest and largest manufacturer of water well equipment.

See your local well supply or pump jobber at once for complete details and service.

CLAYTON MARK & COMPANY

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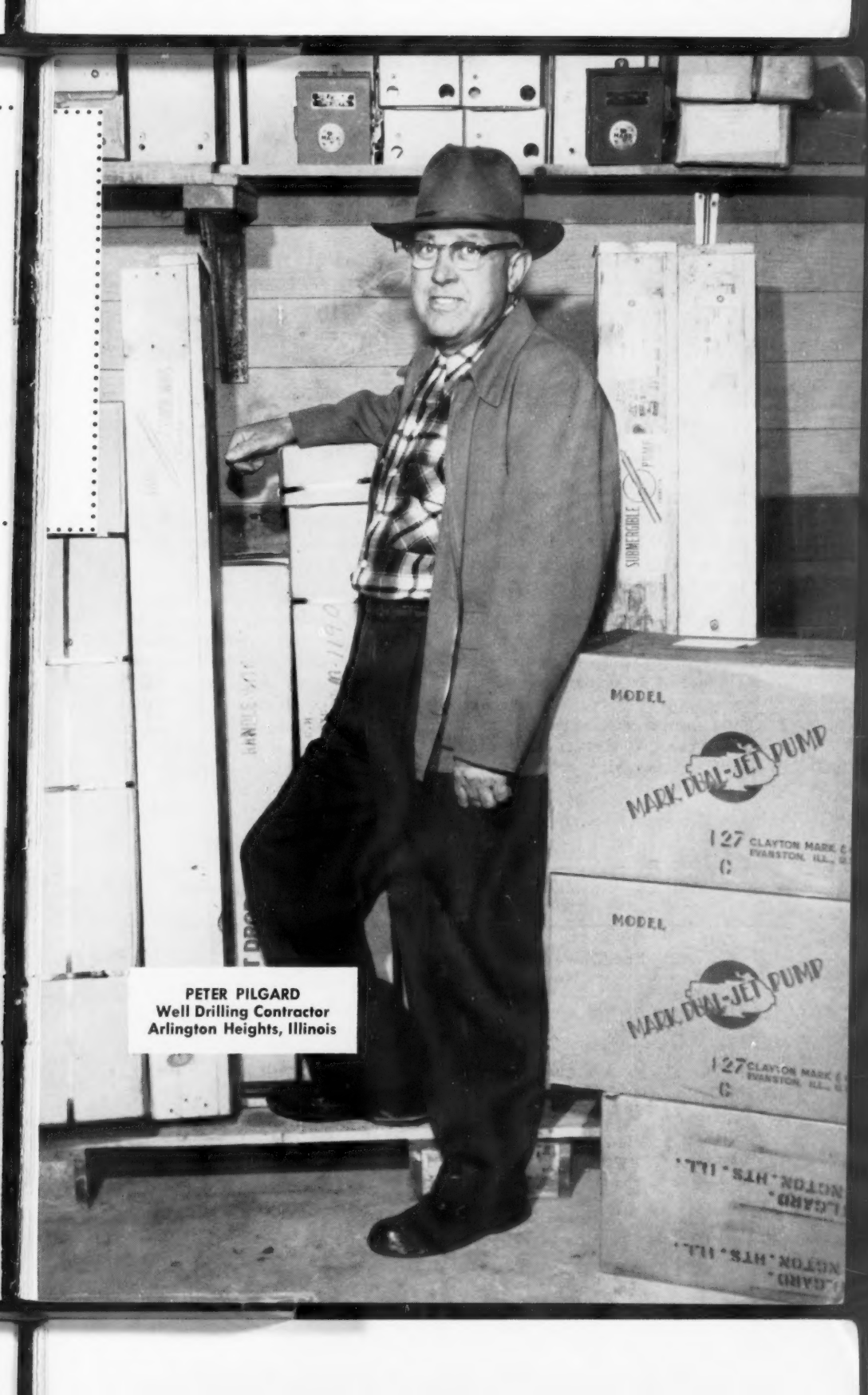
Sell Running Water #1 it!

quality products for home, farm and industry since 1888



PETER PILGARD
Well Drilling Contractor
Arlington Heights, Illinois

Table 3 — Equipment Requirements for Air Lift Pumping: 10 GPM Capacity

Total Head While Pumping (In Feet)	50% Submergence		66⅔% Submergence	
	Piston Displacement (In Cu. Ft.)	Working Pressure (In Lbs.)	Piston Displacement (In Cu. Ft.)	Working Pressure (In Lbs.)
40	5	18	3¼	36
60	6	27	4	54
80	6½	36	4½	72
100	7½	45	5¼	90
120	8	54	5¾	108
140	8½	63	6¼	126
160	9	72	6¾	144
180	9¾	81		
200	10½	90		

(Continued from page 49)

80 feet will be above and 160 feet below. This is a total of 240 feet for the air line and drop pipe.

From Table 3, which gives requirements at a capacity of 10 gpm, we find that, to pump 10 gpm a total distance of 80 feet at 66⅔% submergence, a 4½ cu. ft. piston displacement is required. Since it takes 10 times that amount to lift 100 gpm, the working pressure is 72 pounds.

To determine the pipe line sizes, we see from Table 1 that 100 gpm may be pumped in a 6-in. well or larger by using a 4-in. drop pipe and a 1½-in. air line.

Compressor sizes should be selected to develop a maximum pressure of not less than 100 pounds per square inch and preferably 150 pounds. They should develop displacement capacities in accordance with the amount of piping and yield of water required. Table 4 lists capacities in cubic feet per minute, pressure, and required horsepower for several sizes of single-cylinder, double-

(Continued on page 62)

Table 4 — Capacities of Single-Cylinder Double-Action Compressors (Or Double-Cylinder Single-Action Compressors)

Size of Cylinder (In Inches)		RPM	Piston Displacement (Cu. Ft. per Min.)	Pressure Per Sq. In. (In Lbs.)	Motor HP
Diam.	Stroke				
5	4	600	54	110	7½
6	4	500	65	60	7½
6	6	400	77	150	10
8	6	400	137	80	20
8	8	350	160	130	25
10	10	300	270	130	50

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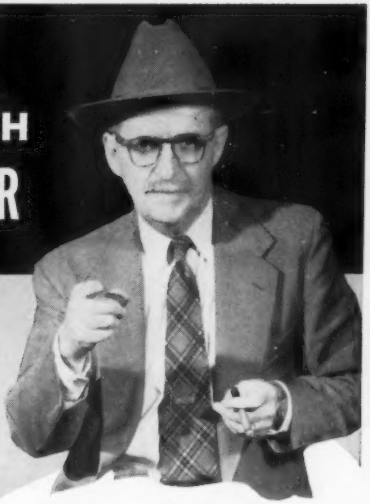

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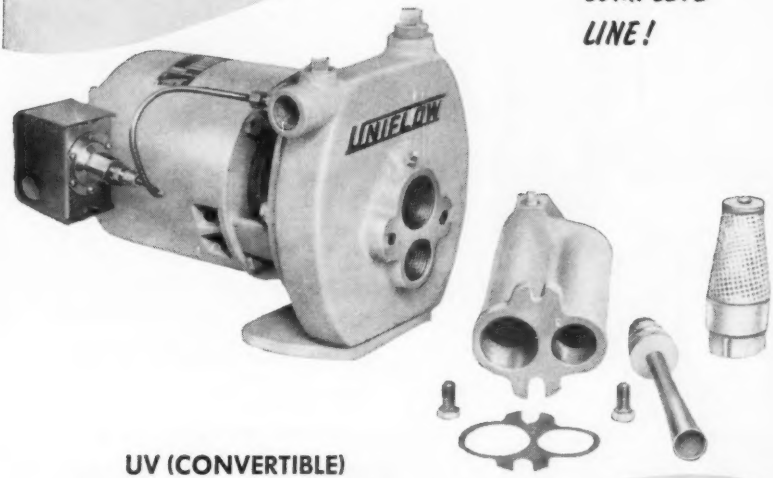

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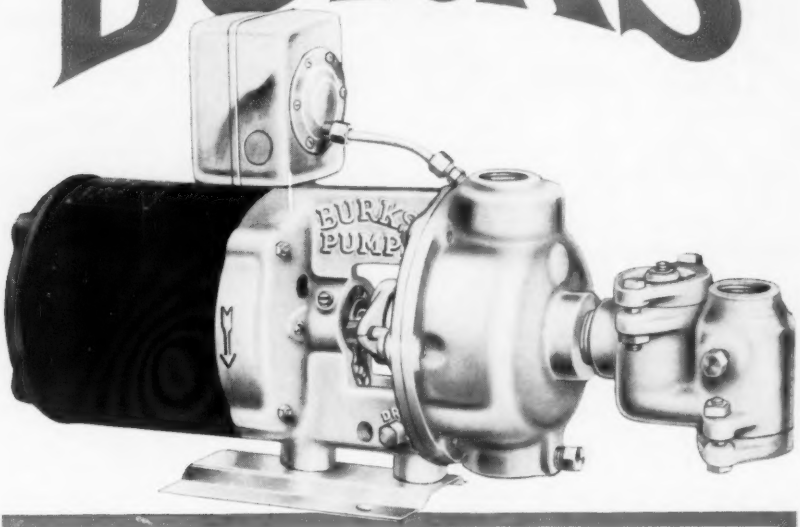

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Mailbag...

(Continued from page 42)

well casing for general use, unless, through some means of chemical analysis, it could be proved that the mineral content in the ground water would not set up some chemical reaction with the tar impregnated in the pipe. This might be a rather difficult thing to do, and it occurs to us that, because of the wide variation of chemical analysis of ground water generally, you might find such pipe to be suitable in one case, but entirely unsuitable in many others.

You refer to wells drilled through shale, rock and clay, cased to the bottom with properly perforated fiber pipes surrounded with gravel. Here is a question of proper procedure in the development of ground water, for it would appear to be questionable whether perforated pipe set in those formations would yield a good supply of clean, potable water. Perhaps your terminology of what constitutes shale, rock and clay carries a different meaning than that applied to this by many. Normally, we think of shale and clay as not being a good water producer, and when we think of rock, there should be no reason for setting perforated pipe, or for gravel packing.

You also speak of sealing the casing above the gravel to exclude surface water with mud bailed from the well. If the mud used contains a sufficient amount of clay, there is no reason why this should not be good practice. Of course, aquagel would no doubt provide a better seal, and if you want a permanent job, you might be interested in studying the details connected with using cement for this purpose.

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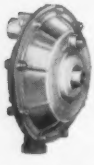

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Brady COMPANIES 18th and Ebright Streets, Muncie, Indiana

in the use of steel pipe for casing a well, and we are frankly of the opinion that the least desirable way of construction and material would be superior to non-ferrous materials, although there is a trend toward the use of plastics for pump use, etc.

Wants Information on Hard Surfacing Bits

Gentlemen:

I would like some information concerning drilling bits. I have read about drillers using something to dress their bits with. It is put on with an oxy-acetylene torch. I would appreciate anything you can tell me about it. I have some hard sandstone in my drilling territory in which a 6-in. self-tempering bit doesn't last for more than one to 1½ feet of hole. We'll generally drill for 1½ hours at 50 to 60 strokes per minute, then have to change bits.

I am using about 1,800 pounds of tools to drill 6-in. holes to 75 or 100 feet. Then I'll case to that depth with 4½-in. pipe and drill to about 140 feet. The soil, sometimes clay and sometimes sandstone, is cased off anywhere from 18 inches to 18 feet. The rest of the drilling is in the hard sandstone.

I would appreciate any information you can give me about surfacing the bits we use in this formation. My father and I have been drilling this territory for the last 50 years.

F.M.R. W.Va.

Dear Sir:

Hard surfacing has been tried by some drilling contractors with varying success. Quite satisfactory results have been obtained with bits faced with hard surface welding rod, but this success has been confined in general to operations in soft formations. In drilling hard formations such as sandstone, dolomite, trap, etc., results have not always been satisfactory.

The important thing in hard surfacing is to get the hard-surfacing material properly applied to the bit, so that it will stay on and prevent checking and spalling of the steel. Spalling occurs only occasionally in

(Continued on page 60)

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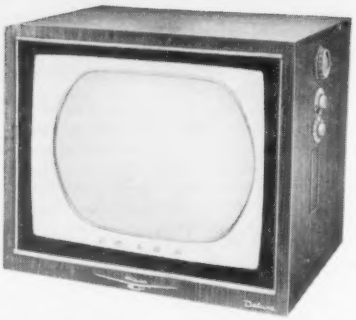

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3rd PRIZE

9 BVI ELECTRIC CAN OPENERS

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Bucyrus-Erie Tools Drill Faster, Last Longer To Put Money in Your Pocket

Bucyrus-Erie tools — from swivel socket to bit — put money in your pocket. They give you top footage in less drilling time because of modern design, based on years of practical research in the field. Extra strength for long life comes from Bucyrus-Erie's careful steel selection and modern metallurgical processes. These tools have been tested and proved in all kinds of formations and in all parts of the world.

And you don't pay extra for high quality. Volume sales and excellent manufacturing facilities make it possible to offer Bucyrus-Erie tools at the same price as ordinary tools.

To get the best footage from your rig, use the best tools — Bucyrus-Erie. Write today for illustrated catalog. **Bucyrus-Erie Company, Drill Division, U. S. Highway 40 West, Box 324, Richmond, Ind.** 15A58C

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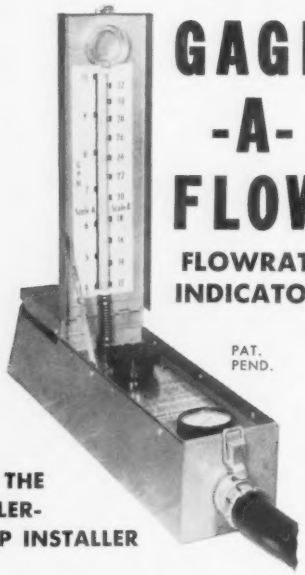

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Rugged metal box 4 x 5 x 20 inches — Lid folds for full protection when not in use — Comes complete with hose for connection to pump discharge or outlet in plumbing — Many uses on the job.

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Model TH 432
READS 4 to 32 GPM
Up to 100 pounds pressure.
74.50 — List Price

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READS 2 to 13 GPM
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Less 25% — To Dealers and Contractors

Send your check or money order
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Mailbag . . .

(Continued from page 57)

drilling soft and consolidated material, but it occurs more frequently in hard rock.

Ordinary welding rods are usually used to build up the bit wearing surfaces to almost gauge size. Then a hard surfacing rod is used to provide wearing and shock resistant qualities to the bit. Many hard-surfacing rod types are on the market, including Studite, Westinghouse #93, and others with similar characteristics. Any of these may be used if the manufacturer's recommendations are followed.

One of the points to be emphasized is that, due to the weight and heavy body section of the drill bit, heat is transmitted very rapidly, and the hard surfacing must be run hot in order to make a solid bond and remain fluid long enough to settle into a smooth deposit. It is therefore essential to preheat the end of the bit to about 700° before beginning the welding or hard facing.

The Study Co., Whittier, Calif.; American Manganese Steel Div., Chicago Heights, Ill.; Mir-O-Col Alloy

"You're very resourceful, Carl."

Co., Los Angeles, Calif.; and Lincoln Electric Welding Co., Cleveland, Ohio, are a few manufacturers of hard-facing material. They will furnish data on hard-facing procedure for churn drill bits, which should be helpful to you in the event you decide to try hard surfacing.

15822 . . .

(Continued from page 31)

to replace the fuel pump. Records show that there have been no other repairs on this equipment, except minor adjustments made in the field.

Before the end of the war, Mr. Morada and his crew managed to hide enough of the motor parts to put the rig out of commission. During the liberation, the drilling crew recovered the lost and buried parts. The rig and crew then went to work for the United States Army. Before the end of 1947, the rig was turned back to the Philippine Government. No. 15822 is still providing safe drinking water for a portion of the 23,000,000 Filipino people in the island chain, which is over 1,000 miles in length. It is the third largest English-speaking nation.

Mr. Morada, with 35 years of drilling experience, has moved up through the various grades and is now chief of the Construction Section, The Philippine National Waterworks and Sewage Authority, Wells and Springs Division. The Authority handles the letting of well and pump contracts covering the entire Philippine Islands and, in addition, operates 326 drill rigs of its own.

The land area of the Philippines comprises 115,000 square miles, equal to the combined area of Kentucky, Indiana and Tennessee. There are

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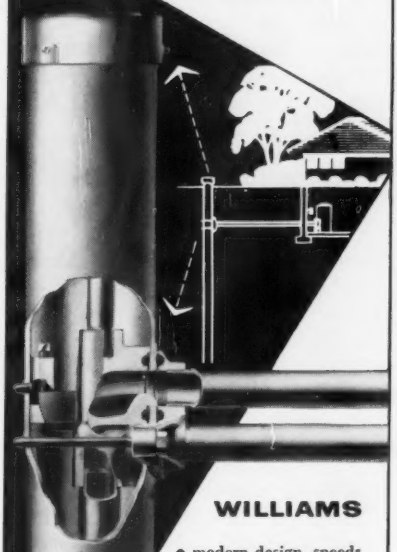

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many places in the area where the inhabitants must carry drinking water for distances of more than five miles. More than 63,000 wells are needed to provide adequate supplies of potable water. The schedule for this year calls for the drilling of 10,000 wells and the development of 300 springs. The wells, which are all to be four to 12 inches in diameter, will vary in depth from 60 to 1,200 feet. And helping to carry its share of the load in filling the quota will be old faithful No. 15822.

Right Pump...

(Continued from page 52)

action compressors. Double-cylinder, single-action compressors have the same rating, but single-acting, single-cylinder compressors have approximately half the capacities listed.

In selecting the proper compressor, we note from Table 4 that a 72-lb. working pressure is not listed. We stated in the preceding paragraph that pressure should not be less than 100 pounds per square inch. Therefore, we take the next larger size for our theoretical 6-in. well, which is 110 pounds per square inch. We find, then, that a 72-lb. working pressure for this well requires a 5 x 4-in. single-cylinder, double-action compressor with 7½-hp motor.

Air lift pumps are much less efficient than turbine pumps, but some high-capacity, small-diameter wells require their use to obtain more water than can be pumped by other means.

When writing advertisers, please say you saw it in THE DRILLER.

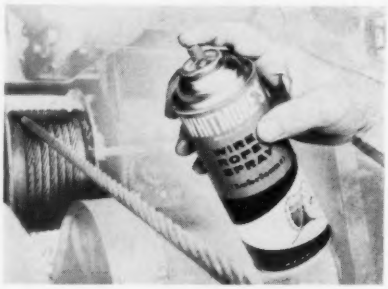
News . . .

(Continued from page 36)

the company to eliminate much of the trouble associated with old-fashioned stuffing boxes and mechanical seals. When the seals need replacing, old seals are easily flipped out and new seals slipped in without having to bother about threads or adjustments. A hard bronze alloy shaft sleeve is furnished with each new seal.

For complete information on the new seals, write to Besler Corp., Dept. TD, 4053 Harlan St., Emeryville, Calif.

Spray-On Lubricant Claimed To Substantially Increase Wire Rope Life

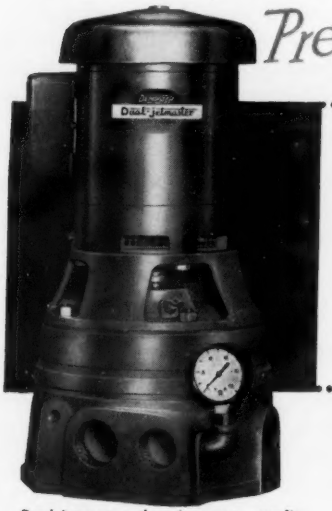


A free-trial, sample can of new aerosol packaging of a formula for lubricating and protecting wire rope and cable is announced by The Whitmore Mfg. Co., Cleveland 4, Ohio.

Packaged in 16-oz. push button, aerosol containers, *Whitmore's Wire Rope Spray Lubricant* is designed for quick, easy application to wire rope and cable. Protective applications of the lubricant penetrate to the rope core, minimizing internal friction and increasing rope life up to 300%, according to the company. In addition,

(Continued on page 66)

For Any Depth, Capacity, or Pressure Requirement



Dual-Jetmaster—the low-cost, profitable way to get extra water at higher pressure from greater depth. Unique back-to-back impeller principle eliminates thrust, cuts pressure on seal approximately in half. Operates on economical ¾ H.P. motor. Shallow-Well, 1 H.P.

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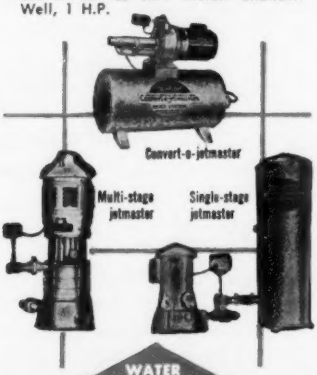
There's more profit in concentrating on one superior line of water systems and pumps. Dempster jetmaster systems let you do that with a system for almost every well, water or pressure requirement. From the low-cost convertible Convert-o-jetmaster for both deep and shallow wells to the single-stage deep or shallow-well and multi-stage jetmasters you are assured of the highest quality of materials, precision engineering and lowest operating and maintenance cost. Every jetmaster system is backed by Dempster!



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BITS *from the wit sharpener*

Hillbilly to neighbor: People are saying that your wife's making moonshine whiskey.

Neighbor: Yes, and I'm ashamed of her. But with all her faults, I love her still.

A campaign worker for the successful candidate for mayor called on him to see if he could get a job for his son on the city payroll.

"Oh, I think so," said the mayor. "What does he do?"

"To tell the truth," said the man, "nothing."

"Good," said the mayor. "We won't have to break him in then."

"Drink?"

"No."

"Neck?"

"No."

"Well, do you eat hay?"

"Of course not!"

"Gad, you're not fit company for man or beast."

Golfer (to member ahead): "Pardon, but would you mind if I played through? I've just heard that my wife has been taken seriously ill."

A man took his Great Dane to a vet.

"Doctor," he said, "you've got to do something. My dog does nothing but chase sports cars."

"Well, that's only natural," replied the vet. "Most dogs chase cars."

"Yes," the man agreed, "but mine catches them and buries them in the back yard."

A three-year-old was struggling with the back button of his long underwear. Finally he gave up, trotted to his mother and said, "Mommy, open my bathroom door, please."

"Stand behind your lover, false woman," thundered the Scotchman, "I'm going to shoot you both."

Tommy, age five, and the oldest of five children, awakened from a tonsil operation to ask, "Where's my baby?"

Solomon's 999th wife: Sol, are you really in love with me?

Solomon: My dear, you are one in a thousand.

Stay-at-Home-Wife: "Darling, how thoughtful! That hotel where you stayed during the convention sent me a beautiful blue night gown."

"I got two free ice cream cones again," proudly announced Peter to his mother that afternoon.

"How did you do that?" asked his mother distrustfully. "I hope you didn't steal them . . ."

"How can you think of such a thing?" replied Peter disappointedly. "I simply took one cone in my right hand, the other cone in my left hand, and said to the checker, 'Would you please get my money out of my pocket . . . but be careful not to hurt my little pet toad.' "

Woman fishing: "Have you another cork, dear? This one keeps sinking."

1-W keeps busy Hollow Rodding PROFITS $$$

Here's a rig that's built for speed and versatility. The 1-W hollow rods 2 to 3-in. dia. holes to maximum depths of 350 to 250 feet respectively . . . drives down casing simultaneously, cuts drilling costs per foot. Cable costs are low, too, since the line does not enter the hole.

You'll profit from the 1-W's fast line speeds that makes quick work of running down a string of rods. As the hole is deepened, drill rods are added quickly.

Changeovers from hollow rod to jetting, cable tool, or hydraulic-drive rotary methods are fast, easy. Drillers everywhere are talking about this simple, compact "combination" rig with its hydraulic spudding action and 4-way drilling. 119W58C

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BUCYRUS-ERIE COMPANY
DRILL DIVISION,
Box 324
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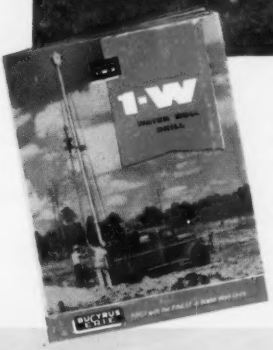
Richmond, Indiana



Write today for *new*, illustrated literature . . . Bulletin 1-W-2. Check the features that help make the 1-W the small well performance leader. Then visit your nearby Bucyrus-Erie distributor and arrange to see one of these snappy rigs in action.

FIRST with the FINEST in Water Well Drills

News . . .

(Continued from page 62)

Whitmore's is claimed to eliminate rust and corrosion of rope and cable, and its "non-gumming" qualities are claimed to substantially reduce "carry-back" of abrasive dirt and dust.

A free-trial, 16-oz. can of the lubricant is available to any interested company by writing to The Whitmore Mfg. Co., Dept. TD, Cleveland 4, Ohio.

New, Lightweight Pump Introduced by British Firm

An inexpensive, revolutionary pump just introduced by an English firm (Holman Bros. Ltd., Camborne, Cornwall) weighs only 11 pounds when made of aluminum but has a performance of 31 gpm against a 200-ft. head. It will be shown at the Brussels Universal and International Exhibition this year.

The pump's applications range from fire prevention to irrigation, and it should be particularly useful for drawing water in parts of the world where water pressures are low. Three sizes of the pump—1¼-in., 1½-in., and 2½-in. suction and delivery connections—requiring prime movers of from ⅓-16 hp, cover a range of outputs from 4½ to 167 gpm against heads of from 50 to 200 feet.

The pump is continuous, self-priming, and self-lubricating. It is a positive axial-flow unit employing a screw (rotor) of entirely new form. This screw engages with a rotating plate to produce a pulseless action that is virtually positive.

Reda Pump Assigns New Sales Territories

Reda Pump Co., Bartlesville, Okla., announced the assignment of new Reda sales territories throughout the country at a recent sales meeting. Eight regional sales territories were announced.

To service the new sales areas, five new district supervisors were also appointed. They join present district supervisors Herb Bean, Buddy Lobdill and Jack Keith, who were also assigned to new areas. The new Reda district supervisors are George Galanis, Bill Lair, Jim Simpson, J. D. Loper and E. F. Benoit. Galanis will cover the Northwest; Lair, the Northeast; Simpson, the Southeast; Loper, Colorado and adjacent state areas; and Benoit, most of Texas and southern New Mexico sales territories.

A company spokesman said, "This

"I send you out for 6-in. casing and you come back with 6 gross of sausage casing!"

assignment of the new sales territories and additional district supervisors, in their respective areas, strengthens and aligns Reda's marketing organization. It will further enable us to better assist Reda jobbers and dealers in the sale and service of Reda submergible pumps."

Furnas Electric Announces New Pressure Switch

New Series "PS" pressure switch featuring pressure connectors, top accessible wiring terminals, no-drift pressure settings and four compact enclosure styles, has been announced by the Furnas Electric Co., Batavia, Ill.

Furnas Electric Series "PS" pressure switches with 85 pounds maximum capacity are rated through one horsepower, 110-220 volts single phase and polyphase. They supply compact controls for water pumps, low pressure air compressors, paint sprayers and other air or water systems requiring automatic control of pressure between preset limits, the company stated.

Pressure settings are "preset" at the factory to meet the individual customer specifications. Adjustment screws allow the customer to adjust or readjust pressure settings to conform with the application.

New Mailer on Pumps Available for Dealers

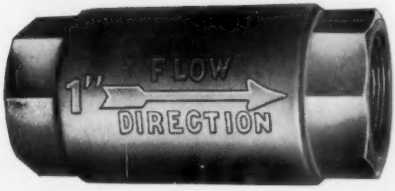
A new mailing and hand out piece on pumps and water systems has been made available for dealer use by The F. E. Myers & Bro. Co., Ashland, Ohio.

The new four-color folder makes the offer to potential customers, "Let us blueprint and install your water

White Flomatic Valves

If you want your pumps to produce with maximum efficiency and a minimum of service calls, be sure to use Flomatic valves. They're precision made of high quality bronze, with twenty years' experience behind them.

If your jobber can't supply you, write us.



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Check Valve

WHITE FLOMATIC CORPORATION Hoosick Falls, New York

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FLEXIBLE PLASTIC PIPE

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Cresline is the *proved right* flexible plastic pipe. Proved right by grueling accelerated use tests. Checked for quality through every stage of production. Approved for drinking water use by the National Sanitation Foundation. Guaranteed *right in writing!* Because Cresline is made of Du Pont Alathon 25, the finest quality virgin polyethylene, those who handle Cresline are eligible to enter Du Pont's easy contest. Entry cards are attached to each coil of Cresline Flexible Plastic Pipe. Write today for literature and the name of your Cresline representative.

Investigate Cresline KL (Kralastic) ...

the Superior Plastic Pipe for Extra-Rugged Use

Cresline KL pipe is made from 100% virgin Kralastic resin. The lightest of all semi-rigid or rigid plastic pipes, it is excellent for many home and industrial uses including drinking water service lines where working pressures permit. Because of its extra strength, it can be used in many applications instead of metal pipe at a savings of 50% to 75% on installation costs. Write for details.

Write for free authoritative booklet — "How to Choose and Use Flexible Plastic Pipe"

All Plastic Pipe Is Round, Black and Has a Hole in It . . . But There Is a Difference!

CRESCENT PLASTICS, Inc.

Dept. D-8, 955 Diamond Ave., Evansville 7, Ind.

supply system."

The folder shows the various types of Myers pumps and water systems and describes the important characteristics of each. It also tells the consumer that the dealer is a factory-trained expert, qualified to plan, install and service a water supply system.

Copies of the booklet are available by writing to The F. E. Myers & Bro. Co., Dept. TD, 303 So. Orange St., Ashland, Ohio.

Folder Describes Pump Installation with Plastic Pipe

A folder giving advantages, maximum depth recommendations and detailed information for installing submersible pumps up through 1-hp and deep jet pumps with new semi-rigid Cresline-KL (*Kralastic*) pipe has been announced by Crescent Plastics, Inc. of Evansville, Ind.

Plastic Pipe Sales Rise as Distributors Stress Quality

Plastic pipe sales are rising, according to a consensus of the industry. One reason given for this growing trend is the increased awareness of distributors toward the stressing of quality plastic pipe that meets the standards established by the U.S. Department of Commerce.

A representative distributor of plastic pipe, Marvin L. Parkhurst, president of the Parkhurst Distributing Co., told a meeting of the plastic pipe and

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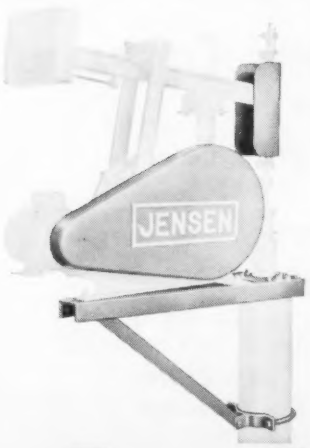
fittings manufacturers, who are members of the Society of the Plastics Industry's Plastic Pipe Research Council, that "Our sales of top quality plastic pipe have continued to increase year after year, and of course that raises the interesting question: 'Why? I don't think we do anything startling but we do make effective use of the promotional material which our plastic pipe manufacturers make available to us.' We say: 'The very best plastic pipe you can make is the very best insurance a water supply contractor can have in protecting his profit on his job. Knowing this to be true, we push National Sanitation Foundation approved plastic pipe.'"

Because of the importance of the National Sanitation Foundation Testing program, Mr. Parkhurst urged the members of the Plastic Pipe Research Council to continue their educational efforts directed towards the consumer so that the consumer may know what he is buying, know what to ask his dealer and distributor for, and know that when he is using NSF approved and labeled plastic pipe he is using plastic pipe that will protect the health of his family and his animals.

Morrison Co. Appoints Representative in Iowa

The Morrison Co., Milwaukee, has announced the appointment of the Mark Anthony Co., Des Moines, Iowa, as representatives of the complete line of the Morrison Aqua-Flo Pumps and Water Systems.

The company will handle sales through dealers and well drilling contractors in the states of Iowa and Nebraska. Warehouse facilities are already established in Des Moines, and



3 new accessories for junior-sized JENSEN 13-W

CABLE GUARD and BELT GUARD . . . quickly attached for added safety.

COMBINATION JACK BASE and SANITARY WELL CAP . . . for fast, easy installation—no foundation is needed. Unit is off of ground; surface water, dirt and other impurities are *locked* out of the well. Keeps water clean and pure.

Get *all* the facts on this rugged little unit by writing for our catalog, featuring prices and specifications for all 14 JENSEN models.

JENSEN WATER SYSTEMS

Made by JENSEN BROS. MFG. CO., INC., Coffeyville, Kansas

additional facilities will be established in other towns. The complete line includes modern jet pumps, piston pumps, rod pumps, submersible pumps and a new line of multi-stage jets for domestic water systems of all sizes and capacities, for shallow and deep wells.

Water-Resources Reports Released for Public Inspection

The Geological Survey announces that the following reports on water resources in the various sections of the country are being released in open file. Copies of all these reports are available for consultation in Room 1242-G, General Services Building, Washington 25, D.C. They are also available for consultation at other places as listed:

Memorandum on *Availability of Ground Water for Irrigation in Certain Areas of Eastern Arkansas.* Geological Survey, 217 Main St., Little Rock, Ark.

Geologic Control of Mineral Composition of Surface Waters of the Southern Coast Ranges, Calif., Abstract only. (For publication by Geological Society of America.) Geological Survey, 2929 Fulton Ave., Sacramento, Calif.

Ground-Water Conditions, Maynard Ordnance Test Station and Vicinity, Sudbury, Mass. Geological Survey, Room 847, Oliver Bldg., Boston, Mass. Geological Survey, 230 Old Country Rd., Mineola, L.I., N.Y.

Caliche Genesis and Rainfall in the Pecos Valley Area of Southeastern New Mexico. Abstract only. (For publication by Geological Society of America.) Geological Survey, Room

(Continued on page 74)

VALLEY STEEL PRODUCTS COMPANY

Louisiana, Missouri

NEW AND USED WATER WELL CASING

LINE PIPE

ALL SIZES
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FREE QUICK DELIVERY — YOUR YARD OR JOB SITE
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T. W. HARNESS
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BARGAIN *counter*

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: $1.00 per line. Minimum charge $4.00. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Closing date — 5th of preceding month. Example — January issue closes December 5th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wis.

DRILLS FOR SALE

22-W Bucyrus-Erie equipped with tool guide, spooling device, casing reel, starting equipment, rubber cushioned sheaves, blower and 36′ power-raised derrick; with drilling, sand and casing lines. Mounted on Dodge truck. Machine and truck in excellent condition. Price: $4400. Contact A & W Artesian Well Co., P. O. Box 562, Woonsocket, R. I. Phone: POplar 2-1649.

20-W, practically new, mounted on late model truck. Fully equipped with cat walks, casing hoist, self starter and cable. Price: $4000. Phone: 6412. Wilson & Beemer Supply Co., Albert Lea, Minnesota.

#16 Ideco, mounted on GMC 6x6. Machine equipped with Int. U-4 engine, electric starter, cali reel and complete set of drilling tools for 5″ to 12″ holes. Machine located in Ohio. Owner deceased. Price: $3500. W. S. Hinerman, 122 So. 16th St., Richmond, Ind.

20-W Bucyrus-Erie, like new, mounted on good F6 Ford truck with new motor. Complete with 6″ drilling tools, 36′ telescopic derrick.

55-A Speedstar with International U-2A engine, mounted on 1951 Dodge truck. Complete with 6″ drilling tools and lines, also starter, casing reel, catheads, spooling device and tool guide. Joseph Solomon, 610 Hatfield St., Horseheads, N.Y. Phone: 9-2071.

DRILLS FOR SALE

20-W Bucyrus-Erie, purchased new late 1956; mounted on 1948 2-ton COE Ford truck with new motor. Drill equipped with complete starting equipment, tool guide, spooling device, casing reel, blower and complete tools and lines for drilling 6″ diameter wells. Excellent condition. Price: $6000. Eastern Drilling Co., 79 West St., Warwick, N.Y. Phone: 55-4127.

One 1949 Shurehit, mounted on '42 Chevrolet 1½ ton truck. 42′ steel telescoping mast, Novo motor, anti-friction bearings. $1750, including tax. Straker Supply Co., Box 112, Mt. Pleasant, Michigan.

One Reverse Circulation drilling rig made to order by Joe Franks, Enid, Oklahoma. This machine has a special 45′ mast with 60,000 lbs. capacity instead of the standard 35′ with 35,000 lbs. capacity. Machine has a heavy duty sand line extra and a Gorman-Rupp centrifugal pump for regular rotary operation. The table is similar to the Winter-Weiss open ring gear type tables. This one was made by California Welding & Equipment Company, who build earth auger equipment. It has an open area of 52″. It may be the largest ring gear ever built. All the earth auger equipment is standard. Continental 244 engines are oversize for this rig. It is estimated that replacement cost of this rig today would be $34,000. Rig has drilled only two reverse hydraulic wells and about seven shallow large diameter wells. It is practically new. Bargain priced at $20,000. Box 724.

Bucyrus-Erie 24-W, equipped with cat heads, spooling device and casing reel, mounted on 6-wheel drive truck, with or without tools and equipment. Badger Well Drilling, 6125 W. Ford du Lac, Milwaukee 16, Wis.

Want to trade: 20-W Drill for larger model machine. J. D. Wade, Jarrettsville, Md.

Davey Model M-8-A air drill mounted on a GMC tandem axle truck, 500 cfm. Davey air compressor; drill is powered by a GMC 4-71 diesel engine; new Oct. 1955. All tools included. Ready to go to work. John Stoepfel, R.R. #4, Ottawa, Ohio. Phone: Kalida, Ohio 6-5.

DRILLS FOR SALE

21-W Bucyrus-Erie new Continental engine with PTO clutch, 500′ new wire line, mounted 1951 Dodge 1½ ton truck, good rubber, good condition. Will sell with or without 4″ tools.

No. 10 Ideco 1948 model, 36′ telescoping derrick with power hoist, cat heads, spooling device and slack line holder. Continental engine with PTO clutch, 500′ new drill line and used 4″ tools, mounted 1947 Ford truck with good rubber, good condition. $2350.

Custom jetting machine, truck mounted with jetting pump and all tools, ready to go to work. $1600.

Kalamazoo jetting machine, Duplex piston pump, and Continental engine, good condition. $800. A. L. Cox and Company, Inc. 202 West Marion Street, Mishawaka, Ind., Phone: BL 9-3791.

1—Portadrill #502 rotary drilling machine. Was new in June 1957—Has only drilled 4 wells approx. 500′ deep ea.—Equipped with: 4 x 8 Gardner Denver pump — double drum drawworks — 7½″ opening in table—1200′ of new ⅜″ plow-steel sandline—800′ of 2⅞″ internal upset drill rod — all necessary subs 1—12¼″, 2—13¾″, 2 — 9⅞″, 2 — 7⅞″ Hughes & Grunner drill bits — 1—4¾″ x 10′ drill collar-rig mounted on new 1957 Ford F-800 truck. Box 716

70 Keystone. Equipped with Waukesha motor, tool guide, slack line holder and Bucyrus-Erie shock absorber. Price: $1600. Drilling tools and lines available at extra cost. Richard E. Vreeland, Box 31, Oak Ridge, N.J.—Phone: 9-5498.

60-L 1954 model, trailer mounted, with K-6 International truck, 6″ and 8″ tools. A-1 condition. Priced to sell.

22-W 1953 model mounted on 1946 2½ ton Dodge with casing reel, catheads, spooling device, power derrick, tool guide. In good condition.

20-W 1953 model mounted on 1½ ton Ford truck, power derrick, starting equipment, tool guide, spooling device. Fair condition.

20-W 1952 model mounted on 1½ ton Chevrolet truck, power derrick, starting equipment, tool guide, spooling device. In good condition. Smith Well Company, J. B. Smith, 1505 Rankin Rd. Greensboro, N. C. Phone: Broadway 3-0644.

DRILLS FOR SALE

Dunlap reverse circulation rotary irrigation well drilling rig. A-1 condition.

Failing 1000 Holemaster test rig. Also top condition.

Owner deceased, MUST SELL. For complete details write: Virginia Thomson, 5415 E. Osborn Rd., Phoenix, Ariz. Phone: Whitney 5-0252.

21-W Bucyrus-Erie with blower, catheads, spooling device, stem guide, 600′ of new ⅝″ drill line, 600′—⅜″ sand line, 2 drill bits 5⅝″ stem, jars, horn socket, jar bumper, anvil, slack tub, trailer mounted. Price: $3000. Will mount on 1949 Chevrolet truck in excellent condition for slight extra charge. M. M. Coffey, Lexington, Tenn. Phone: WO 8-2498.

1000 Republic Rotary rig, 27′ mast, 18′ Kelly, 4½ x 6 G. D. pump. Mounted on 1950 F-5 Ford with Brown Lippe Trans. and front end winch. Ready to go to work. Sacrifice at $3875. for quick sale. Rauschenberger and Sons, 4310 Steele Street, Denver, Colo. Phone: Cherry 4-5621.

Armstrong 33, all steel drill, semi-trailer, with Chevrolet towing truck. Price: $2500. Plus tax.

Bucyrus-Erie 21-W, truck mounted. Good bargain at $2500. Plus tax.

Contact the Straker Supply Co., Mt. Pleasant, Mich. Phone: 33-411.

K2W Loomis Clipper mounted on 1½ ton Ford truck. Complete with tools to drill 4, 6, 8, & 10″ wells. Also miscellaneous tools. L. Hague, 122 S. 7th St., Ann Arbor, Michigan.

#8 Bucyrus-Erie bit dresser electrically driven for dressing 6″ and 8″ bits. Equipped with oil burning furnace, three-rack quenching tank & pin cap for 2″ x 3″—8 OWS joints. Purchased new this year. A bargain at $3000. S & S Well Drilling Co., Jack Sanga, Eastford, Conn. Phone: Walnut 8-3489.

71 Star mounted on 1949 Diamond-T truck. Drill equipped with B-E shock absorber and powered with a 4-cylinder Le-Roi engine. No tools and lines are available. Price: $1500. William P. Shutkufski, Rt. #1, Lake Ariel, Pa.

Spudders, rotaries, tools. Nation wide sales listings. If buying or selling contact Pressey & Son, P.O. Box 614, Pueblo, Colo.

DRILLS FOR SALE

Howell 120 rig mounted on 1949 Ford truck, Hercules power unit, telescoping derrick, 500′ cable & sand line. Machine & truck in good condition. $2000. Don Whaley, Wheaton, Minn. Phone: 219R Wheaton.

Failing 1500 Rotary Drill. Mounted on 51 model 185 International; 2⅞″ drill stem, heavy duty 350′. Drag & rock bits 4¾″ through 24″. Rig is premium quality and condition. Runs smooth as a new one. Automatic break out 38′ mast, 4½″ x 5″ G. D. pump, good 9:00 x 20 tires, mud and snow, 1 spare. Mast will nest back for interstate long hauls. Price $11,500. Hueppelsheuser Drilling Service, South Hi-way 81, Enid, Oklahoma. Phone: AD 7-2690.

One 20-W Bucyrus-Erie machine, one year old, one-piece derrick, excellent condition, mounted on a 1951 Dodge with 2-speed axle; 500′ of ¼″ and 500′ of 7/16″ cable and complete tools. Harvey Acker, Hales Corners, Wis. Do not write; phone ORchard 2-5667.

Ideco Model 10 drill, 31 Stone drill mounted on trucks. Complete string 6″ tools, good condition. Bargain price. Davis & Cassada Drilling Co. Somerset, Kentucky, Phone: 854 X-W.

1954 Model 60-L drill, trailer mounted, powered with 6 cylinder buda engine all in perfect condition. Phone: MO 4-3708, Pampa, Texas, H & R Drilling Co.

Keystone 50 complete with 6 and 8″ tools, 750′ new drilling cable on Reo truck, air brakes, perfect condition ready for work. H. Tarakajian, 22 Earnshaw Place, Clifton, N. J. Phone: Gregory 1-7764.

1—1956 71 Star drilling machine mounted on a 2-ton GMC truck w/2 speed axle. Complete with 4″ and 6″ tools. Just like new. Mr. Ed. Haught, Rt. 2, Proctor, West Va.

Cyclone model 35SR with International engine, mounted on 1946 International truck recently overhauled — $2100. Easy terms. Stern & Jaffer, 2500 No. Miami Ave., Miami, Florida.

Four 20-W rigs and 1 22-W. All late models, in perfect condition. Mounted on late model trucks with or without tools. Priced from $4500 up. AAA Well Drilling & Supply Co., 3780 Gordon Rd. SW. Atlanta, Ga. Phone: Plaza 5-5298.

DRILLS FOR SALE

Two Stone 31 drilling machines, new in 1954, both rigs mounted on good Ford trucks with good tires. Entire outfits have good paint, good drilling cables and sand-lines. Tools for 4″ holes. These machines are in A-1 condition and ready to go. Price: $3500. each. Harry H. Fox & Sons, R-6, Shelbyville, Ind. Phone: WAldron 4181.

Keystone 70 mounted on 1941 GMC 6x6, 6-wheel drive, fully equipped with 6″ tools and lines. Steal this machine for $2500 and go to work tomorrow. Rogue Valley Drilling Co., 885 Shafer Lane, Medford, Ore. Phone: SP 2-7372.

Western rotary, 4½ x 5 Gardner Denver pump. Mounted on 1956 F600 Ford with only 13,000 miles. Also 815 gal. water truck. Both $5450 or will consider trades of other than rigs. Rodney Barnes, Huron, S. Dak.

Reich 600 Rotary, 18 months old, mounted on IMC 1-190 heavy-duty truck, 10 wheeler, powered with Cummins diesel engine, 150 HP, with power take-off drive. Equipment includes air compressor, mud pumps, dust collector, electric hoist & complete tool equipment to drill 6″ holes, bits, 350′ 3½″ heavy-duty drill rod, etc. Harolds Artesian Well Company, 45 Berry St., Torrington, Conn. Phone: HUnter 9-5588.

All-steel Howell well drill mounted on Reo heavy-duty truck. 1 string 5″ tools. Priced for quick sale. George Lunkley, 450 Columbia St., Waterloo, Iowa. Phone: AD 2-5373.

36-L Bucyrus-Erie spudder on skids or trailer mounted. Near Chicago. Excellent condition; gas-gasoline. Box 718.

Several 55 and 71 Stars, a 22-W and 24-L Bucyrus-Erie, and various used 6″ tools. Priced for quick sale. Heater Well Co., Phone: TE 2-4675, Raleigh, N. C.

#55 Star mounted on 1949 Studebaker truck. Catheads, one water-cooled, casing reel, catwalks, cable. Very good condition. $3500. D. A. Williams, 31st Ave. & 4th St. S.E., Mpls., Minn.

20-W, one-piece derrick with complete string of 6″ tools; 500′ of drilling cable, 500′ of sand line; new engine installed approximately one year ago; mounted on '47 Chevrolet truck. Contact Ed Kranz, 5214 W. Villard St., Milwaukee, Wis.

DRILLS FOR SALE

22-W Bucyrus-Erie rig and equipment on 1950 Chevrolet truck. In good repair and ready to go. Astor Diamond, R. R. #1, Somerset, Kentucky, Phone: 8151W.

24-L Bucyrus-Erie, trailer mounted. Completely reconditioned. 48′ power derrick, catheads, casing reel, tool-crane etc. With or without tools. Will sell or trade on #1500 Failing rotary machine. Milan W. Freese, R. R #1, Marion, Iowa. Phone: DR 7-3445.

One 200 Mayhew rotary mounted on 1952 Ford. New motor & tires, excellent condition, with all tools. Price: $4500. Inspection of rig welcome. Phone: 5947n3. C. O. Faidley, R. R. #1—Box 84, Rushville, Missouri.

1—20-W #114385, spooling device, casing reel, mounted on 1948 2-ton GMC truck.
1—20-W #115134, casing reel, spooling device, fan blower, partial starter, mounted on 1946 Chevrolet truck.
1—20-W #113077, casing reel, spooling device, fan blower, partial starter, mounted on 1948 Ford truck.
1—20-W #109649, casing reel, spooling device, fan blower, partial starter, mounted on 1950 GMC truck.
1—20-W #81201, starter, fan blower, spooling device, mounted on 1941 GMC truck.
1—1-W #114345, starting equipment, piston type pump, mounted on 1948 Chevrolet truck. Hickory Well Supply Co. Inc., Hwy. 70 at 18th St. Place, S. W., P. O. Box 602, Hickory, N. C. Phone: 4125.

MISCELLANEOUS FOR SALE

Gill rock bit dresser with anvil hammer. Equipped to dress 6″ and 8″ bits. Priced for quick sale. $1000. Taskers Artesian Well Contractors, Northwood Narrows, N. H. Phone: WIlson 2-5474.

New pipe casing in stock: 3″, 4″, 6″, 8″, 10″, 12″. Reconditioned pipe casing in stock: 3″, 4″, 4½″, 5″, 6″, 8″, 10″, 12″. Cutting and threading facilities; attractive prices on request. H. Schwartz & Sons, 2235 North Bodine St., Phila., Pa., Garfield 6-6464.

Stainless well strainer, gauge .012, size 8″ section 19′. Size 8″ section 12′. Price $475.00 new. Charlie L. Wright, Rt. 2, Box 53, Vicksburg, Miss.

MISCELLANEOUS FOR SALE

500′ pocket size water level indicator complete ready to use, with one extra spud. Price: $21. post paid. C. W. Lutts, 705 Plaza Serena, Ontario, California.

Complete string of big hole tools with 8″—10″ and 12″ bits. Joints 2½″ x 3½″-7 API. New: Universal Giant #101-AA clutch, shaft, sprockets, chain and drum.
Temper screw with clamps. 8″ and 10″ pipe with coupling. Reasonably priced. Alexander Blote, 13-14 River Road, Fair Lawn, N. J. Phone: SW 6-0570.

1—Main belt for 22-W, good as new. Price: $35.00. A & B Drilling Company, Box 182, Scobey, Mont.

New and used pipe and casing. Tom's Well Driller Supplies, 933 Fern Ave., Reading, Pa. Phone: SPruce 7-6331.

HELP WANTED

Experienced, reliable cable tool and rotary driller for sand and gravel and screen work. We do industrial, technical, electric logging and turbine work. Don Roe, Vandalia, Ohio. Phone: TW-84514.

WELL BUSINESS FOR SALE

House, shop, and 75 year old well and pump business located Eastern N. Y. State. Write for details. Box 726.

WELL BUSINESS FOR SALE

Established well drilling business and equipment for sale due to ill health; or will sell equipment alone. Roberts Eng. Inc., 1819 N. W. 79 st., Miami, Fla.

Established water well and pump business, three machines, located New Jersey, Box 725.

EQUIPMENT WANTED

Want to buy used (good running certificate general overhaul) rig, rotary or cable tool system for 5,000 feet depth, complete with drilling tools and casing for drilling. Cash payment. Otto Carbo, Post Office Box 876, Cable address O C A, Guayaquil, Ecuador, South America.

Will trade $18,000. equity in small motel on highway 66, for Bucyrus 24-L or 60-L, trucks & tools of same value. Anchor Lodge, 5515 Central N.E., Albuquerque, N. Mex. Phone: AM 8-8496.

POSITION WANTED

Cable tool operator, 16 years experience all phases well and test hole drilling through all formations. Have electro-welding certificate, also experienced in hard surface and casing cutting. Former U. S. Civil Service drill operator — will travel anywhere in U. S. or abroad—will work wages, percentage or footage basis.

Have working partner with 30 years experience in all phases diamond drilling including 12 years as supervisor. Will make excellent team for exploratory drilling and grouting. Will take work singly or as team. Box 723.

WHEN
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THE DRILLER

News . . .

(Continued from page 70)

279, Geology Bldg., University of New Mexico, Albuquerque, N. Mex.

Occurrence and Movement of Ground Water in Part of the Capitan Reef Complex, Southeastern New Mexico. Geological Survey, Room 279, Geology Bldg., University of Mexico, Albuquerque, N. Mex.

The Relation of Phosphorites to Ground Water in Beaufort County, N. C. — Geological Survey, Federal Bldg., Raleigh, N.C.; Room 1242-G, GSA Bldg.

Water Levels in Observation Wells in Tennessee in 1956 — Geological Survey, Memphis General Depot, U.S. Army, Memphis, Tenn.

Geology and Ground-Water Resources of the Dyersburg Quadrangle, Tennessee—Geological Survey, Memphis General Depot, U.S. Army, Memphis, Tenn.; Geological Survey, Room G-2, State Office Bldg., Nashville, Tenn.

Character of the Pre-Wisconsin Valley of the Upper Ohio River — Geological Survey, West Virginia University, Morgantown, W. Va.

Map of Northwestern Hillsborough County, Fla., Showing the Piezometric Surface. Geological Survey, New Dining Hall, Florida State Univ., Tallahassee, Fla.

Water Flow Rate Indicator Available

Announcement has been made by Gage-A-Flow Co., Columbus (Ohio) of the availability of the Gage-A-Flow Flow Rate Indicator. The indicator, which connects to the pump or any other location in a water piping system to determine the rate of flow from two to 13 gpm, is designed to fulfill the need for a portable flow rate indicator that can be carried to job locations easily.

According to the company, the indicator permits accurate setting of control valves on pumps for adjustment to maximum capacity and also serves as an exact-guide for adjusting the pump down to match well capacity. It can be used in accurately checking the capacity of old or new wells or pumps.

The indicator, which comes in a cabinet with baked Hammertone finish, is provided with a handle for easy carrying. With the lid folded down, the unit measures 4″ x 5″ x 20″. It is equipped with ten feet of Nylon-reinforced plastic hose with hose connectors and adapter for pipe connections.

For complete information on the Gage-A-Flow Flow Rate Indicator write to Gage-A-Flow Co., Dept. TD, P.O. Box 5874, Columbus 21, Ohio.

Lake...

(Continued from page 21)

Bucyrus-Erie 22-W for the government, Lake, in his modest way, is contributing significantly to water resource development in his native state. A son, Steven, now 10 years old, can already do a few things with the 1-W. So it could be that the name of Lake may become better and better known in Rio Grande Valley drilling circles.

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The Aermotor Salesman told me: **"If you can find better pumps than ours--install them!"**

And you know—he was right! There just aren't any pumps better than Aermotor's.

Sure there are plenty of *cheaper* pumps. But why are they cheaper? You can bet I don't want to stake *my* reputation on finding out why! What about size? Aermotor has a pump to handle every job in the domestic pump market—where 80 to 90% of the business is. Let the other guy go after the 10% that's left. I'm concentrating on the market where the big money is!

Sound interesting? You bet it does. Get smart (like I did) and send Aermotor a post card with your name on it. A Representative will call on you and explain the benefits of an Aermotor Franchise in your territory. And there's no obligation, either. Don't forget . . . mail that post card to:

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WATER WHERE YOU WANT IT

AERMOTOR COMPANY

2500 W. Roosevelt Road, Chicago 8, Illinois, Dept. D-5

Here's an aerial view of Bucyrus-Erie Co.'s newly-completed drill plant, located west of Richmond, Ind., on U. S. Highway 40. Total floor space of the building, which was completed in less than year, is 350,000 square feet. Approximately $5 million worth of production equipment has been installed. Transfer of Bucyrus-Erie's drill division from South Milwaukee (Wis.) to Richmond was completed in April.

The **Driller**

The monthly magazine for water well drillers

South Milwaukee, Wis.

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